VOLUME 10, NO. 4 NOVEMBER, 1959

NAUTICAL RESEARCH JOURNAL

PUBLISHED BY THE NAUTICAL RESEARCH GUILD

NATIONAL ARCHIVES

THE MANHATTAN

INTRODUCTION OF NEW MEMBERS

ARTHUR E. COHEN - 1640 Mohican Street, Philadelphia 38, Pennsylvania: indicates he is particularly interested in building models of warships and clipper ships. His period of interest ranges from 1700 to 1850. Mr. Cohen states he is a collector of books on the subject of ship model construction and would like to meet and compare notes with fellow model builders.

HYLTON PATRICK DUNSTAN - 20 Sixth Street, Chinola, Northern Rhodesia, Central Africa: advises he is interested in anything connected with Liberty ships, including drawings, photos, histories, etc. Freighters from 1910 to the present are also of interest to Mr. Dunstan. Our new member is a photographer, photo-lab. technician, and model builder. Anyone interested in an exchange arrangement involving ship photos and the like should contact Mr. Dunstan directly.

PAUL GREENLEE - 44653 North 18th Street West, Lancaster, California: describes himself as a model builder and artist. He is interested in broad phases of the sail era.

JEAN H. GUERMONPREZ - 26 Rue de Fleurus, Paris VI, France: describes his interests as Mississippi River and tributaries packets in use between 1817 and 1930. His research also covers Civil War activities on the western rivers betwen 1861 and 1865. Mr. Guermonprez is a member of the Belgian Ship Lovers Society and is active as a model builder and artist.

ENSIGN DONALD M. HERNON, USN - U.S.S. ROOKS (DD-804), c/o F.P.O. New York, New York: is particularly interested in the use of the spritsail topsail in maneuvering old sailing vessels. Period of interest covers craft of the 1600 - 1800 era.

LIONEL C. MEEKER - 7 Fruit Tree Road, Portuguese Bend, California: advises: "I am interested in writing a practical manual for ship modelers concomitant with building an actual model, as well as gleaning information from others. It would appear that a good book on this subject is long overdue .."

STANLEY M. MILDENBERG - 2028 Fortune Road, Glenside, Pennsylvania: is a member of the Philadelphia Ship Model Society and is presently building models of the FLYING CLOUD and the BOUNTY. Besides being an avid builder, Mr. Mildenberg is investigating possibilities of importing old-time model makers' woods.

MAJOR GEORGE S. PATTON, O/CINC USAREUR, APO 403, c/o Postmaster, New York, New York: advises he is interested in model building, yachting, and boating of all types. Particularly interested in sailing ships of the Napoleonic period (1781-1815).

HAROLD POLYBANK - 218-39 105th Avenue, Queens Village, New York: writes that he is a constructor of built-up ship models of all periods. He is currently building a framed and planked model of the CONSTELLATION (original plan) in cooperation with the history of same presently being written by Harry Fisk of New York. The model will be displayed in a New York savings bank window at various stages of construction. Mr. Polybank is a model builder and artist. He is a member of the New York Ship Craft Club.

ERNEST M. WHITE - 119 Exchange Street, Portland 3, Maine: indicates he was interested in nautical matters.

GEORGE A. WILLE, 3rd - 606 West Maple Avenue, Apt. A-6, Merchantville, New Jersey: writes "am interested in sailing and have done considerable amount in Barnegat Bay area; presently building a 24' gaff-rigged, centerboard sloop." Mr. Wille is active in U.S.N.R. and is a modeler interested in colonial to modern sailing vessels.

CHANGES OF ADDRESS

LT. COL. LEWIS C. BRITTON - Air Force Ballistic Missile Division, Unit Post Office, Los Angeles 45, California
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MILES R. MAYBERRY - 6717 N.W. 24th Street, Bethany, Oklahoma
DR. JURGEN MEYER - Geibelallee 20, Kiel, Germany
CAPTAIN JOHN W. MORONEY - 3575 Pilot Training Wing, Advance A.F.B., Enid,Oklahoma
PAUL E. VARDEMAN, JR. - 606 East 109th Street, Kansas City 31, Missouri
CHARLES R. O. WOOD - 16 Bluff Road, Allerton Hill, Hull, Massachusetts

DECEASED

CAPTAIN STEPHEN C. SULLIVAN of San Francisco, California
RALPH E. CROPLEY of New York, New York

MESSAGE FROM THE SECRETARY-TREASURER

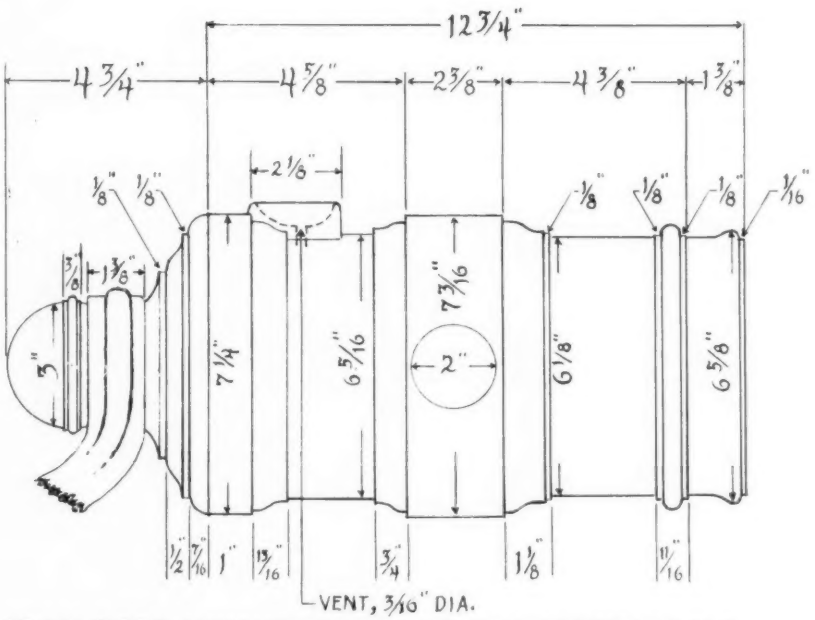
The release of this fourth number completes Volume 10 of the "Nautical Research Journal" and brings to a close, a year later, the work originally scheduled for production in 1958. Your new editor of the Journal, Roy Rogers, has demonstrated his ability by completing the present volume within a time period that will enable him to undertake Volume 11 for production and completion in 1960. This new work can be undertaken and brought to a successful conclusion only if the following elements are present: (a) sufficient publishable material that will aid and hold the interest of our members and (b) sufficient funds to cover the cost of publishing and mailing the Journal plus other expenses incidental to conducting business of the Nautical Research Guild.

Approximately one third of our members have forwarded their dues to cover the cost of publishing Volume 11, and it will greatly lessen the work of the Secretary-Treasurer if the remainder will do likewise promptly. If you are uncertain as to the status of your account, please contact the Secretary-Treasurer at once or glance at the lower portion of your membership card. Any member with a membership card showing Volume 11 noted thereon is in good standing for 1960. Cards with only Volume 10 noted indicate membership will expire at the close of 1959. Please remember that the organization is YOUR Nautical Research Guild and the publication is YOUR "Nautical Research Journal" - no more - no less. It is only with your help that the volunteer officers of the Guild can carry the work forward to greater accomplishments than heretofore.

CORRECTION:

Page 88 4 Jib downhaul P & S
should be: 4 Jib downhaul S

Page 90 62 Main topgallant studdingsail halyards
should be: 62 Main topmast studdingsail halyards



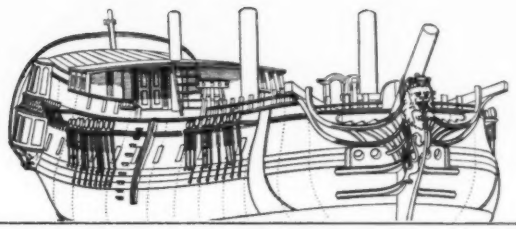
IRON 3 PDR. HOWITZER · POSSIBIY AMERICAN, & LATE 18TH CENTURY··

OWNED BY THE SOCIETY FOR THE PRESERVATION OF NEW ENGLAND ANTIQUITIES, BOSTON.

BORE ABOUT 3" · TRUNIONS BROKEN OFF ~ APPEAR TO HAVE BEEN 2 in. CENTER OF TRUNIONS COINCIDES WITH THE AXIS of the BORE.

VENT PATCH, TOP.

Winthrop Pratt, Jr.



VOL.10, NO.4 THE NAUTICAL RESEARCH JOURNAL NOVEMBER, 1959

Ship-model making, as we think of it today, goes back to the time of Samuel Pepys. There are several passages in his celebrated "Diary" recounting conversations with Anthony Deane, who gave him models and explained many nautical matters. Of course men at sea have always whittled models of their favorite craft, while small boys attempted to copy the huge vessels they saw tied up at nearby wharfs. Up to the 1920's, model making in the United States appears to have been a sporadic affair carried on by individuals as the whim moved them. (I am now speaking of the amateur. Every generation has its quota of professionals engaged in helping the builders to raise money for their latest designs.)

All of this was changed in this country after the first World War. Much of it can be attributed to a number of ship model construction articles featured in the how-to-do-it magazines, which attracted thousands. The articles written by the late Captain E. Armitage McCann for "Popular Science" magazine created a huge audience. As soon as Captain McCann's newest project appeared, men who hardly knew a gouge from a chisel rushed down to their basement shops to add another vessel to their growing fleet. Clubs sprang up, and ship-model making became a full-grown hobby, the same as golf and gardening, and like these, could be pursued by the rich and the poor, the young and the old.

These articles, along with those in other magazines, have had a lasting effect on model making, not only here but also abroad. Model supply companies were formed to take advantage of the demand for special materials and plans. Book publishers found a new market. Unfortunately, most of these items - kits, plans, and books - were aimed at encompassing the whole field of model makers. No chances were taken of discouraging either the beginner or the advanced craftsman. The kit for a clipper ship that was intended for the novice was also expected to please the experienced builder. These two advertising blurbs express the sentiment of the time:- "Make a clipper ship, either simplified or with complete details," and "With a little skill and patience, even the rankest amateur can produce in miniature a magnificent Spanish galleon." These themes are still penalizing the serious amateur.

Since that time, I have seen some unusually fine models constructed by amateurs. The plans sold by model supply firms had been used in making some, while others were based on the original drawings. Yet in hardly any of these cases had the builders confined themselves to the data given in the drawings. From long experience, each knew that they were not sufficient, and from the start intended to supplement them with additional features they had dug up themselves. And these would be further augmented by their own collection of original source books and the files of the maritime history magazines. This practice did not seem odd to these men. In fact they expected "reconstruction" to be an integral part of ship-model making. Yet this situation is not as necessary as might be supposed. It has existed for so long that it is usually accepted without question.

Not too many years ago the typical set of ship-model plans consisted of three sheets:- 1) Line Drawings; 2) Profile and Deck Layout; 3) Sail Plan. The Profile sheet sometimes showed only the tops of the deck structures that were visible above the rail; the rest of the deck furniture, below this level, was dotted in. Many

improvements can be noted today. It has become a standard practice with several firms to supply detailed drawings of the deck furniture and fittings. Some firms (although only a small number so far) are including the original mast and spar diameters. This does away with the job of trying to scale them off the plans and also, incidentally, assists those who want to study the real ship. In many cases isometric sketches are added for clarity. Several years ago, one company, which has set new standards for accuracy, adopted the practice of printing its rigging plans in two colors. The standing rigging is shown in black, while the running rigging is red. These drawings are very easy to read, especially for the inexperienced man who is not familiar with many types of craft. Another company, that has been selling a variety of plans for years, has reached the point where the same set of drawings they formerly advertised as "fully detailed" is now listed as "simplified" - an advancement that speaks for itself. A few plans are now on the market which give the sizes of the original lines and blocks.

Some of the best plans available today are found in several English books published during the last few years. Undoubtedly the finest example is Longridge's "The Anatomy of Nelson's Ships", with its splendid illustrations, both plans and sketches, by Bowness and Campbell. Fine drawings for both the historian and the model maker are included in the books written by Edgar J. March and in Basil Greenhill's "Merchant Schooners". March and Greenhill have set high standards for other historians, and model builders owe much to them for recording many minor details of smaller craft that have been generally neglected.

None of these firms or individuals has had an easy time. To produce a brand new and elaborate set of plans is a lengthy and expensive task. The total number of ship-model makers, in comparison with such hobbies as, say, stamp collecting, is small, and the serious craftsman is only a fraction of the lot. After all these years, he remains greatly outnumbered by the careless and incompetent who purchase the run-of-the-mill plans.

Roy Rogers, Editor

THE NAUTICAL RESEARCH JOURNAL is published by members of the NAUTICAL RESEARCH GUILD. Membership dues are $5.00 per annum and include all issues of the Journal published during the year, plus index of the current volume and a copy of the latest Membership Roster. New members receive the numbers which have been previously issued in the current year.

Dues are payable January First of each year and are in force until receipt of the written resignation of the member. Opinions and assertions in the Journal are the private ones of the writers. All rights are reserved and no material may be reproduced without the written permission of the Editor.

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RECONSTRUCTED GUNS FOR THE SOVEREIGN OF THE SEAS

BY CARY S. TUCKER

The SOVEREIGN OF THE SEAS of 1637 has fascinated historians and model makers for generations. She was the largest ship of her time and the pride of Charles I. Often described as the most decorative ship ever built, when it is realized that out of a total cost of over £ 65,000, the sum of £ 6,691 was spent on ornamentation, then one can form some idea of how far her builders were willing to go to achieve this appearance. This was at a time when a forty gun ship could be built for £ 6,500.

In passing it may be mentioned that many subjects did not share their Monarch's enthusiasm for this showpiece. A special ship tax was levied as the expense mounted. Years later the objections to this, together with other excesses of the reign, were to lead to the beheading of Charles and the overthrow of the monarchy.

The SOVEREIGN - to use one of the names that were haphazardly applied to her during her reign - has often been the subject of model makers anxious to display or test their skills. Undoubtedly the most noteworthy of these reconstructions was the model created by the late Henry B. Culver. Culver described the workmanship that went into this elaborate model in "The Mariner's Mirror" (Vol. 8, page 367), and in "Country Life", but I do not know the date of this.

While I have not felt sufficiently ambitious to attempt recreating the ship, the design of her guns has interested me for some time. The more I thought of this problem the more curious I became as to exactly what could be done to approximate a gun of this period. At the same time it should be borne in mind that in the case of these particular guns, I know little - if any - more than anyone else as to their shapes.

After re-examining the "Country Life" article, I was more astonished than I remember being at the shape of Culver's guns. From a long range and limited knowledge of the Tower of London's collection of cannon, I believe that in this case an East Indian piece has been copied to get the double-thistle-vase, which is certainly foreign to any of the English pieces of the period. So that readers will not have to check the reference libraries, a small sketch is given of the guns Culver made (or rather had made, since he had the assistance of several skilled craftsmen), with as much detail as I could conveniently take off. In the pictures in the original article, the large breeching ropes - which I have omitted in the sketch - obscured much of the guns themselves.

A concise description of the SOVEREIGN is given in the catalog of the Science Museum ("Sailing Ships", two volumes, 1952), including a listing of her guns. I shall not repeat it in its entirety, since I am not satisfied as to its accuracy, but those who are interested can find it on page 27 of the second volume. Anyway, the table lists the following on the lower tier:

Along the sides - 20 cannon drakes, 9 ft. long, of 45 cwt.
As bow chasers - 2 demi-cannon drakes, 11 1/2 ft. long, of 48 cwt.
Aft of the above - 2 " " " 10 ft. long, of 44 cwt.
As stern chasers - 4 " " " 12 1/2 ft. long, of 53 cwt.

I have two basic objections to accepting this example. All pieces are much lighter in weight than would be expected from guns as large as the diameter of the bores as the name applied would indicate. And the drake modifier means, if anything, a piece much shorter than the usual gun of the time. For this last point, reference can be made to

William Smith's "The Arte of Shooting in Greate Ordnance". He gives cannon of 8 in., 7 1/2 in., and 7 1/4 in. bores, and demi-cannon of 6 3/4 in., 6 1/2 in., 6 1/4 in., and 6 in. bores. Weights of these pieces are from 8,000 to 5,000 pounds. Demi-cannon drakes are said to be of 6 1/2 in. bore and 3,000 pounds weight, but 16 calibers in length. This would give a length of 8 ft. 8 in. (104 in.) if the bore length is taken as the caliber length, plus about one caliber for the length from the bottom of the bore to the rear of the base ring, for the total length of the gun as usually measured. Of course the 8 ft. 8 in. could also be taken as the length from the muzzle face to the rear of the base ring, for the terms are not clear and, moreover, may not have been well established at the time.

In any case, the length is far from the 12 1/2 ft., 11 1/2 ft., and 10 ft. as specified. This point is made only as it affects the drake terms, as guns have usually been made in a variety of lengths. It is also worth noting that the demi-cannon drake took a charge of only 9 pounds of powder, whereas the smallest of the regular demi-cannon took 16 pounds.

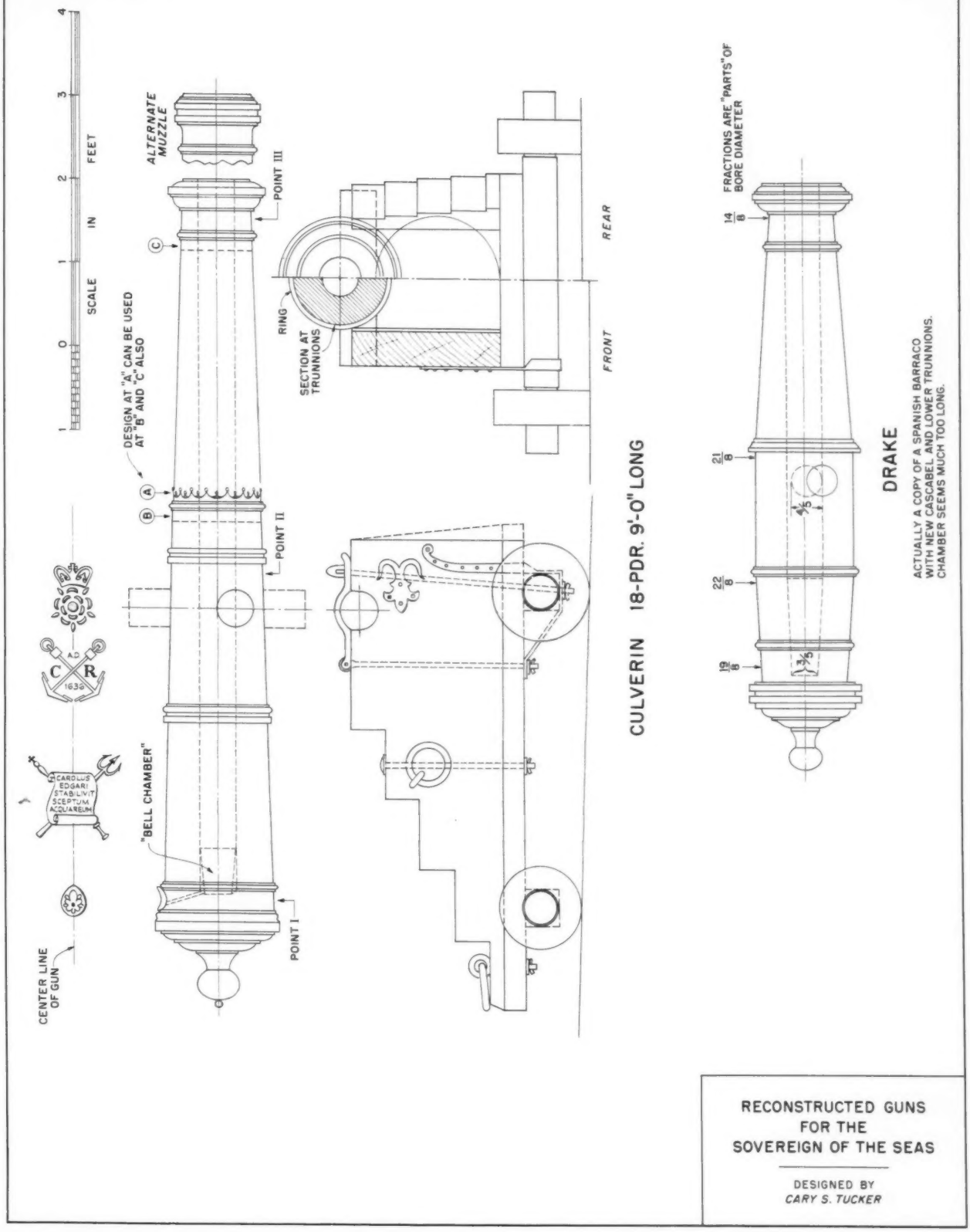
Robert Norton, who published "The Gunner, or the Practice Artillery" (largely a reprint, without accreditation, of Ufano), gives 8 in. and 7 in. bores, and the only demi-cannon is of 6 1/2 in. No cannon drake is shown, and the other information - so far as these calibers are concerned - is the same as given by Smith. So much for the aurhorities; Monson and Mainwaring wrote mostly of ordnance of the time of Elizabeth, around 1625, and Monson refers to drakes as being "taper bored" (probably with a tapered chamber actually, or "bell-chambered" as the Spanish called it).

As a result of this comparison I wrote to the Science Museum asking whether there had been any confirmation of the drakes as constituting the armament of the SOVEREIGN, but I was simply told that the tables had been given by Oppenheim as a result of his studies of the early navy. It is my impression that no one had ever questioned the table, and I don't know of any further investigation by anyone in England. There must exist some more details of her battery, but research in England is indicated. Since France and Spain, as well as Holland, went to the system of designating gun sizes by the weight of the shot, and England hung on to the "name" system until 1716, it is possible that more useful information could be obtained from the Combat Intelligence files of Holland or France than from English records, unless the latter were in great detail.

From my own point of view, I believe that drakes were probably indistinguishable from other guns from the outside, when made to regular lengths. If made to specified 16 caliber, it is more than possible that they followed the lines of Spanish berraca or corcovado (the names mean "boar" or "hunchback") which was "tapered within and without". According to Firrufino, "El Perfecto Artillero", 1648, the corcovado was made only in the 40 pdr. caliber, but of 12-14 caliber in length.

Actually we know much more about the Spanish design of guns of this period than we do of the English ones, as there is a sort of blank page from 1600 to 1660. This was the time, too, when the Royal Navy went from armament of mostly brass guns to almost exclusively iron pieces. The SOVEREIGN's pieces were probably of brass, however, due to her importance. And Heywood (Culver calls him "Haywood") wrote: "Her guns are of the finest brass, decorated with the Rose and Crown, Fouled Anchors, and the Scepter and Trident," together with the inscription "Carolus Edgari Sceptum Slabilivit Acquareum" (Charles has grasped firmly Edgar's scepter of the sea).

The drawing shows my idea of the probable outline of a sample gun based on a culverin or 18 pdr., nine ft. from muzzle face to rear of breech (or base-) plate. This length is about the maximum for broadside guns. In later days no piece for use



RECONSTRUCTED GUNS FOR THE SOVEREIGN OF THE SEAS

DESIGNED BY
CARY S. TUCKER

below decks was more than 9 ft. 6 in., so that I have little belief in the 12 1/2 ft. size, unless the measurement was perhaps overall.

The SOVEREIGN's guns should be of the ringed, or bonded, muzzle construction, and nowhere as lumpy as those used by Culver. As to general proportions, English brass guns of around this time seem to have used a breech diameter three times as thick as the caliber. This would give metal thicknesses of one at the breech (Point I), 3/4 at the trunnion (Point II), and of 1/2 caliber at the neck (Point III). Some Spanish guns were made thinner, or of 7/8, 5/8, and 3/8 caliber at these points, but I know of no reason why English guns, especially those for this vessel, should be of lighter metal; the only reason, possibly, being to conform with the table (given by Oppenheim) if on further examination it should be decided it is authoritative. The famous picture of the stern of the SOVEREIGN and her builder, Peter Pett, judging from reproductions, appears to have smooth-muzzled guns (largely) on the starboard side, while those on the port seem to have large flanges at the muzzle.

Of course all mouldings on a modern reconstruction could be made differently if desired, and an alternate muzzle shape is shown which may be quite as accurate. The one chosen makes a bow to the shape shown on the Van de Velde painting, but many ships had a large variety of shapes in their armament. A drawing by Puget shows some twenty pieces, not one of which is like the others in all details. There can be numerous decorations, arms, etc., but these should not be raised over a quarter-inch on the full size weapons. The motto has been placed on a scroll, though other arrangements could have been used, and combined with the "scepter and trident", as otherwise they looked rather bare. The same reason applies to the addition of the monogram "C R" (Charles Rex) and the fouled anchors. No rope has been incorporated into this design, although there should probably be some. But it is a minor point which I will leave to anyone who wishes to continue this study.

The carriages for these guns were almost certainly of the type used on the reconstructed Jamestown vessels, that is, with a solid floor, or "sole" as the French called it. (See The Nautical Research Journal, Vol. 9, No. 3.) This is supported by the drawing of a "Section of Fourth Rate, 1684" in Charnock's "History of Naval Architecture". My design also follows, in a general way, that shown by Firrufino as the one used by the "Inglesac, Francesac y Olandes". The high carriages made for the SUSAN CONSTANT should not be used as a specific guide to copy or follow, however, as they were made for a special condition. Generally, the center of the gun should be about 3 in. below the center of the port to allow for sighting over it, and also to allow for more elevation than depression.

All of the carriage forward of the rims of the front trucks (wheels) is wasted wood, as it serves no purpose. A slant, such as that shown by the dotted line, might be added, though, and the front axle moved forward to bring the rims of the trucks even with it. The slope would depend on the amount of the tumblehome of the ship's side. The trucks could be considerably smaller, about 11 in. instead of 14 in., with a corresponding increase in the height of the carriage, but the drawing seemed about right to my eye.

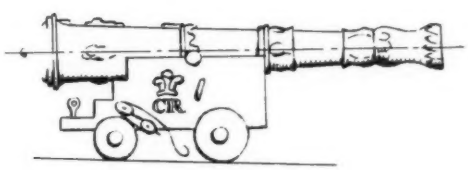
The carriage should be wide enough at the rear to allow the breech to fit between the sides when the quoin and stool are removed. The quoin and stool bed should be similar to those made for the Jamestown replicas.

Hardware could easily be more elaborate than that I have drawn, if desired, with a second keyed fitting replacing the hinge of the capsquare, while iron strapping could be used across the top of the carriage and under the trunnions. The fitting on the side of the carriage, near the front, is one shown by Firrufino. The hook is

apparently made double for the purpose of symmetry only, though perhaps the extra hook came in handy when the gun and carriage were fastened to the ship's side before a storm. I do not believe that each carriage was decorated with a raised crown monogram as Culver showed. If these had been carvings, they would have been rapidly ruined in action; if castings, they would have been quite expensive and apt to be stolen.

The gun tackle for the SOVEREIGN's gun would be - I believe - quite similar to later gear, except that the train tackle might hook to the upper hooks on the side of the carriage. This is on the basis that the transition to the use of a breeching rope seized to the cascabel had been made around 1620 or before. I am inclined to believe that around 1600-1620 the English used a rope which went around the carriage and was allowed to catch on its "steps". Even earlier, the French (at least) had rigged their "brague" through holes in the sides of the carriage. (While this was, perhaps, a neater looking method and enabled the use of shorter lengths of ropes, it was not as good as the method used by the English for the ropes were apt to break due to the short bends.)

Those readers who wish to know more about the SOVEREIGN will find reproductions of almost all the pictures and engravings in a large folio, about 12 in. by 18 in., as I remember. This paper backed book was written by Sir John Cavil, I believe, but I cannot give you the name of the work. It is well worth seeing if you can locate it from this clue. A recent English writer set her guns as 42's, 24's, 9's, and 3's, but this is an over simplification, I think. Another point in doubting the Oppenheim list is that it shows nothing smaller than the demi-culverin which were pretty large for upper tier pieces around a hundred years later, especially for quarterdeck and forecastle. My own opinion is that we shall have to accept Heywood's listing of cannon, demi-cannon, culverin, and demi-culverin, as well as "other ordinance". Probably these were 42's, 32's, 18's, 9's, and an assortment of sakers 5 1/2-6 pdrs., minions (about 4's) and a few 3's.



A sketch of a typical gun on Henry B. Culver's model of the SOVEREIGN OF THE SEAS

The Ontario-St. Lawrence Development Commission wishes to obtain ship models of the craft which were used on the St. Lawrence River and Lake Ontario in the early days of the nineteenth century, including both commercial and naval vessels. A special building is being constructed to contain a memorial to transportation on the St. Lawrence River.

Model makers and dealers should write to:

Dr. J. L. Carroll, First Vice-Chairman
The Ontario-St. Lawrence Development Commission
Morrisburg, Ontario
Canada

QUESTIONS AND ANSWERS

The purpose of this section is to provide a means of obtaining and exchanging information which is not generally accessible. Correspondents who send their answers directly to the inquirer are urged to send copies to the Journal, so that the information can be made available to others.

QUESTIONS:

(10-4-1) Skysails, moonsails, etc.: Information is wanted on how the following sails were rigged and the kinds of spars used:- skysails, moonsails, star scrapers, jib of jibs, water sails, ringtails, and save alls, which were used in East Indiamen and clipper ships, both English and American.

-L. E. Dowling

(10-4-2) Marine lever clock: I am a clock collector and have just acquired a marine lever clock - forerunner of the ship chronometer - made by Charles Kirk of Wolcott, Conn., between 1837 and 1847. It is an old and well-worn piece and apparently saw much rough service, although it is in good working order. Inscribed in ink on the back of the clock is a date which appears to be 1857, and below this is written "Brig ATLANTIC" followed by "Capt. Wallac".

Can anyone give me any information about the Brig ATLANTIC, when it was in service, whether it was a naval vessel or privately owned, and any interesting incidents in its history?

-Silvio A. Bedini

(10-4-3) Schooner GENERAL ARMSTRONG (War of 1812): I am highly interested in any new material which may have been unearthed in recent years about the famous privateer GENERAL ARMSTRONG - such as logbooks, contemporary newspaper accounts, plans, and pictures.

-James Ferguson

(10-4-4) Sailor-made shoes: In the sailing ship era, the mariner put his hand to a diversity of handicrafts to lighten the tedium of a long passage. One of these was the making of canvas shoes, which were very safe when working aloft. Like all the sailor's crafts, it consisted of whatever material was readily to hand; in this case, a piece of sail cloth, tarred marline, some oiled chafing leather, and roping twine. The method of procedure was to carve out a rough last (the sailors called it a "foot"), cut the uppers of sail cloth, and tack them to the lasts. Next, weave the shaped soles from marline, sewing them, when finished, to the uppers with roping twine. The shoes were then removed from the last, and the upper edges and the after seam bound with chafing leather, the finished article being a seamanlike job and excellent on the feet.

Note that these shoes must not be confused with the jute-soled espadrilles common in Latin countries. The soles of these were of a long length of plaited sennit, laid on edge and wound round and round its own part. The former were the shaped sole woven in the flat, with a weave not unlike "sword matting" in appearance. Is there any old "sailor-man" who can give me a description of the weave?

-L. E. Dowling

(10-4-5) HESPER, LUTHER LITTLE, and MARY F. BARRETT: Any photos available of the four-masted schooners HESPER and LUTHER LITTLE and the five-master MARY F. BARRETT?

-Stephen S. MacNaughton

(10-4-6) MIDGET UNIVERSAL woodworking machine: I am trying to obtain a Midget Universal and attachments. My letters to the last known manufacturer (The Riverside Mfg. Co., New Haven, Conn.) have not been answered. Does anyone know if the machine is still being made, and does a member have a Midget, either new or used, that he wants to sell?

Contact: Gary M. White
109 Winnebago St.
Walla Walla,Wash.

(10-4-7) ERSKINE M. PHELPS: It has been my impression that when the ERSKINE M. PHELPS was sold by A. Sewall & Co. to the Union Oil Co. in February, 1913, she was immediately converted into an oil-tank barge. Recently, however, I have received information that she was operated under sail until early in 1914. I should like to obtain confirmation of this from anyone who was on her at the time or who has any records of her first year under the Union Oil Company's ownership.

-F. W. Thober

ANSWERS:

(10-2-3) Silver soldering: I have always had excellent success with silver soldering and brazing problems by consulting the firm of Handy and Harman, 82 Fulton St., New York, New York. They provide, gratis, a fine group of materials on the various solders they make, including composition, melting points, and the recommended fluxes. In addition, they provide a very complete illustrated instruction sheet covering the process in more than adequate detail for the amateur who does soldering only occasionally.

-Edward F. Schortman

(10-3-1) Ship HENRY B. HYDE (1884): I have seen no better drawings of the HYDE than those reproduced in Chapelle's "American Sailing Ships". The plans were made from lines taken by Carville L. Douglas from the builder's half-model in the City Hall, Bath, Maine, while the sail plan is from the sailmaker Thomaston. Mr. Douglas built a fine model of the HYDE in 1939 for Sydney B. Lermond, but his notes, drawings, etc., for that project are long since lost. Information that has come to light since that time would suggest that the ship's deck layout was not as reconstructed in that model.

-Roger Bragdon

Modelling gun port wreaths: Perhaps my method of making wreaths and other ornamentation will be of help. I use a thick liquid that is made for filling small crevices in machine shop castings and tools. Just paint on with a fine brush; if the wreath is not raised enough, apply more filler when the previous applications are dry. Afterwards give the completed work a coat of shellac, which will act as a sealer and also give strength. It can then be gilded or colored. When too thick for working the filler can be thinned with a few drops of turpentine.

-Bernard T. Wardle

(Note: Mr. Wardle kindly sent me a sample of this material. It is made by Goodlass-Wall of Liverpool, and is listed as an industrial finish known as Grey Oil Filler. It is brushed on machine castings, rubbed down smooth, and a final coat is

then sprayed on. Mr. Wardle wrote that these fillers are ground in either cellulose or oil. He prefers the oil-bound type because it is a little slower dryer, thus giving more working time. This material is undoubtedly used in numerous places under a variety of trade names. I shall be glad to hear from other readers who have used it or are familiar with its use in machine shops. -Ed.)

A painting by Jacobsen: My painting is that of the S. S. CITY OF BERLIN. This picture measures 35 1/2 in. x 21 1/2 in. inside the frame, and shows the ship broadside, bow to the left, in a moderate sea with a fine sunset (or sunrise) in the background.

After various changes in the vessel and in her ownership, she finished life as the Army transport MEADE. She was a most handsome clipper-bowed vessel (for her type), and the painting shows this well. In the lower right hand corner is the caption, "A. Jacobsen, 257 - 6th Ave., N. Y., 1879".

-Townsend J. Smith

NOTES AND COMMENTS

RIGGING OF THE SPANKER ON SQUARE-RIGGERS

J. S. Kamp's note, "Rigging of Spanker Boom and Gaff" (Nautical Research Journal, Vol. 10, p. 99), is an excellent description of the rigging and handling of one particular type of spanker. However, it is somewhat misleading, as it gives the impression that this type of spanker was in general use during the late nineteenth and early twentieth centuries. Actually, it was the usual rig on British vessels, both ships and barks, but was rarely used on American vessels.

To confirm my general impressions on this, I examined photographs of about 170 American vessels built between 1853 and 1902. These included the illustrations in Matthews' "American Merchant Ships", Lubbock's "Down Easters", and Hennessy's "Sewall Ships of Steel" and photographs in my own collection.

Of 113 ships, all had hoisting spankers, 63 with gaffs, 50 without. Sixty-eight of these had trysail masts, eleven did not; the others were unclear or taken from such an angle that I could not tell whether they did or not. Of 41 three-masted barks, 34 had hoisting spankers, 31 of these having gaffs. Seven had standing gaffs, six of these being fixed to the mast above the top, at the cap of the lower mast. Fourteen had trysail masts, 21 did not. Of six wooden four-masted barks, all had standing gaffs, three being at the cap of the lower mast. None of these had a trysail mast. About half the wooden vessels examined had mizzen lower masts with bands; all of these had trysail masts. The obviously impractical combination of a banded mast and no trysail mast of course would not be found on a real ship, even though some misguided model builders may use it.

The nine steel barks built by Arthur Sewall & Co. were all rigged originally with standing gaffs. The last three, ACME, ATLAS, and WILLIAM P. FRYE, had theirs below the top; the others all carried them above the tops, about where their lower-mast caps would have been had they carried fidded topmasts. These vessels at first had two-part spankers. The lower portion was triangular, with its peak coming just below the gaff. The upper part (sometimes called a ringtail) was quadrilateral and slightly overlapped the lower. It was laced to the gaff and had a sheet leading to the outer end of the boom and a tack to the boom near the mast. These upper sails seem to have been little used, and most photographs of the vessels under sail show them with only the triangular spanker set. In some cases the gaff was removed entirely.

NATIONAL ARCHIVES

THE MANHATTAN BREAKING HEAVY ICE IN THE HUDSON RIVER

I found no American-built ships rigged exactly as described by Mr. Kamp, and the only barks I found that were so rigged were the COURANT (in a photograph taken when under the Norwegian flag) and the four-masters OCEAN KING, SHENANDOAH, and SUSQUEHANNA. The last two did not carry this rig all their lives, as other photographs show them with gaffs above the tops.

-F. W. Thober

THE PHENOMENON OF LYING TO

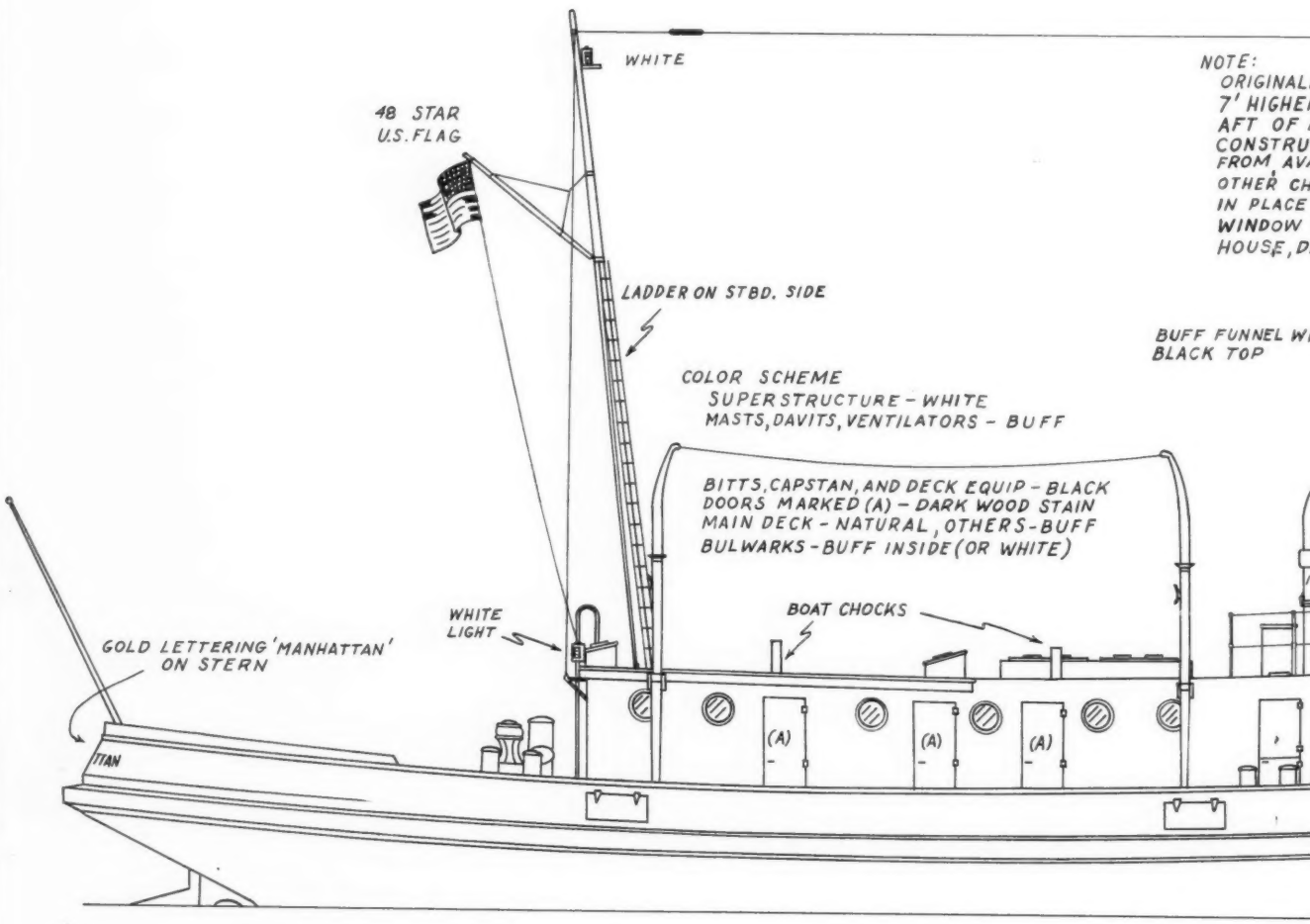
The "Grande Encyclopedie" (about 1890) discusses the phenomenon of a ship lying to in heavy weather in the following terms:

"The headway imparted by the sails is then cancelled by the wind pressure on her hull and rigging; the ship does not advance, but under the lateral effect of the wind makes leeway. There then occurs a phenomenon, thanks to which a very small vessel can brave a very heavy sea without danger, for as she drifts she leaves an eddy to windward in which the seas lose their kinetic force and become swells. The ship is protected by this eddy and can await the end of the gale without laboring excessively and sometimes only shipping very little water. The important point is hence to keep the ship constantly under the lee of this protecting eddy, and from this point of view it may be said that every ship has a sail-spread under which she lies to better than under any other. If there is too much headsail, the ship falls off, gathers way, and coming out from behind the eddy, receives the sea against her bow. If, on the other hand, there is an excess of after sail, the ship comes up into the wind, gains sternway, and falls off, then gaining headway again, she comes into the wind, etc. There results a series of sheers, during which the ship not only comes out from behind the eddy but goes astern against a heavy sea, which exposes her rudder to grave injuries. It is consequently necessary above everything to avoid an excess of after sail --- to keep the ship to the wind it is generally necessary to carry the helm alee, but it must be righted on the approach of a heavy sea."

The only other book in which I have seen this point mentioned is "Ozean Wettfahrten" by Ludwig Dinklage, who also ascribes the security of a ship lying to to the eddy created by her leeway. I have discussed the matter with a number of veteran seamen; one or two "guessed there might be something in it", the others laughed at the idea. But as there must be a reason for the rather anomalous fact that a ship having the sea approximately abeam is in a position of security and as the scoffers advanced no explanation for it, I strongly suspect that the explanation of the "Encyclopedie" is correct. It is a matter of common knowledge that a ship rounding-to after scudding, or wearing in bad weather when she presents her beam to the wind incurs grave danger of shipping a damaging sea, yet she is in the same position with respect to the direction of the sea and under the same canvas as a vessel hove to. But she still conserves good headway and hence either leaves the eddy astern or else has not had time to acquire sufficient leeway to create one. Many old seamanship books caution not to let the ship fall and bring the sea abeam. But there is so little difference in the sine of the angle of incidence when the sea is abeam or a point or two before it that the impact of the sea cannot be materially increased. But the vessel emerges from behind her eddy when she falls off.

In a work such as the "Grande Encyclopedie", such an article would not be entrusted to anyone but a recognized authority on seamanship, and in 1890 that would have been a sail-trained seaman. Indeed, the article, which is quite long, is almost entirely devoted to heaving to sailing ships.

-D. L. Dennis



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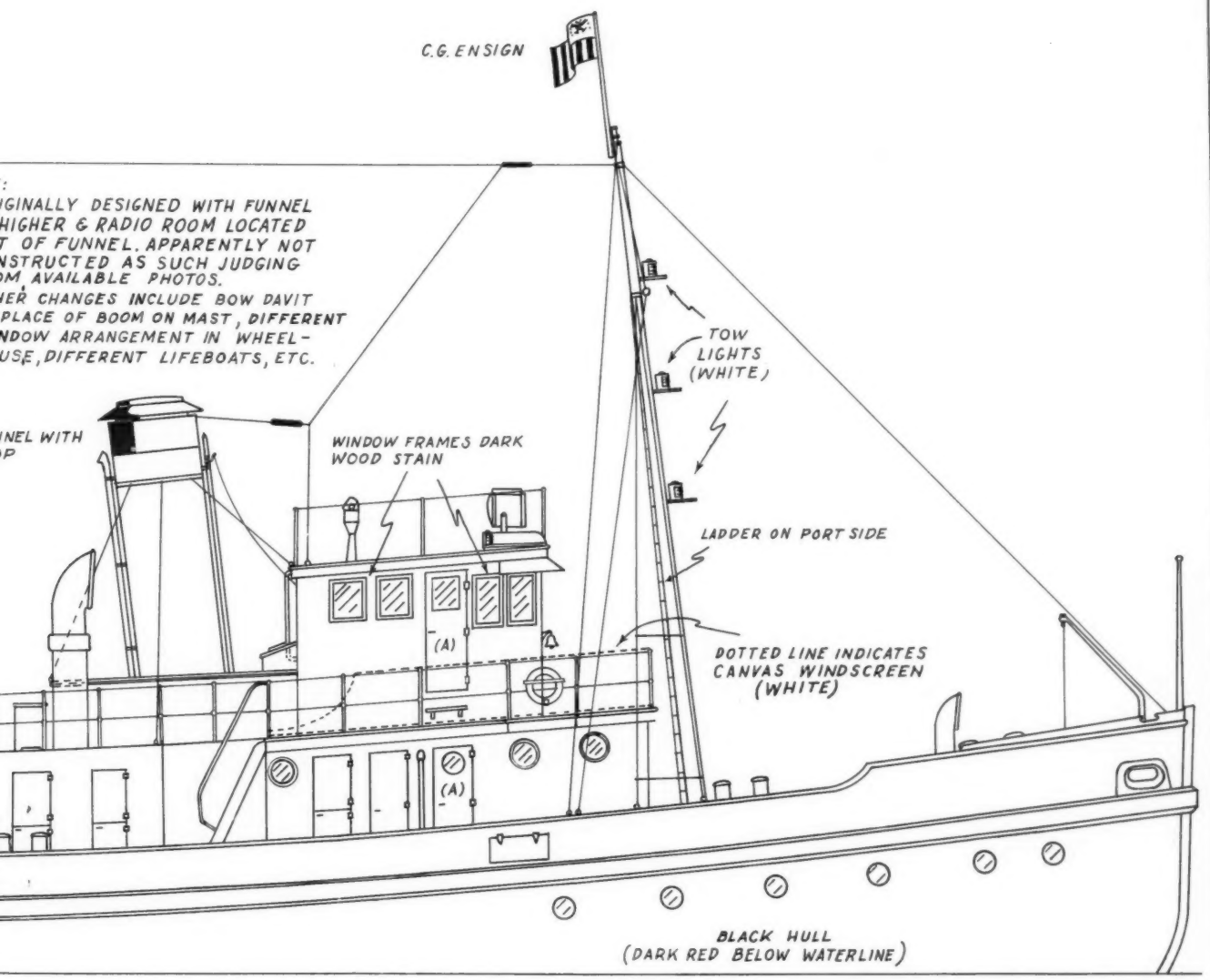


10 15 20 25 30

IN FEET

U.S. COAST GUARD
CUTTER NO. 30

MANHATTAN

LAUNCHED JUNE 15, 1918
BALBOA, CANAL ZONE
L.O.A. 120'-3" BEAM 24'-0"

DRAWN BY CHARLES S. FOX

SHEET 1 OF 3 SHEETS

COAST GUARD CUTTER MANHATTAN

BY CHARLES S. FOX

Coast Guard Cutter No. 30, the MANHATTAN, was first authorized, with an appropriation of $125,000 as maximum expenditure for her construction, by an Act of August 29, 1916. This amount was not sufficient, however, and no bids were received. A second Act on March 4, 1917, increased the maximum expenditure to $185,000, and her construction was begun at Balboa, Canal Zone. She was launched on June 15, 1918, and accepted as completed December 30, 1918.

The MANHATTAN was designed to replace the earlier MANHATTAN, the anchorage patrol boat in New York Harbor. Her general duties included that of anchorage duty, ice breaking on the Hudson River, salvage vessel, and fire float, and she appears to have served in that capacity from 1919 to January 30, 1947, at which time she was decommissioned and then stored at the Coast Guard yard, Curtis Bay, Maryland, pending disposal.

During World War II she was painted the usual wartime grey and given some light armament; according to one source, two 1 pdrs. Although not a glamorous or heroic type of vessel, she was typical of many thousands of work vessels that make up the backbone of our maritime services.

For those who may be interested in further information, her records, including the log books from 1918 to 1947, are stored in the National Archives.

Specifications of Cutter No. 30, the MANHATTAN:

Length:	120'-3"
Beam:	24'-0"
Draft:	11'-9"
Displacement:	406 tons
Horsepower:	600
Propulsion:	Reciprocating triple expansion
Fuel:	Oil
Cruising radius:	1460 miles
Speed: Cruising:	9 knots
Maximum	11.2 knots
Complement:	2 Warrant Officers 18 Enlisted Men

Note: Mr. Fox has developed the plans of the MANHATTAN for model builders from original Coast Guard plans. They consist of three sheets. One is shown on pages 132 and 133, and the other two will be printed in the next issue of the Journal.

-Editor

BOOK REVIEWS

THE UNITED STATES NAVY IN THE PACIFIC, 1897-1909 - by William R. Braisted. Folding chart in pocket. xii + 282 pp. Austin: University of Texas Press. $5.00.

This is a detailed appraisal of the turbulent and fermenting period in the Pacific that began on the eve of the Spanish-American War and culminated twelve years later when the United States emerged as a world power, able to defend herself in either the Atlantic or the Pacific. While Professor Braisted includes an informative and very readable record of the naval engagements, his primary purpose is to review the Navy's influence on national interests. "To examine the growth of America's naval power during this period," he writes, "is to reveal the extent to which naval policy and diplomacy interacted, sometimes making common cause, sometimes working at cross-purposes, in the constantly widening sphere of America's interests and responsibilities."

Questions that were to affect nations for years were often decided on a day-to day basis; programs that were laid out years in advance were a rarity. "The exchanges between the State and Navy departments during the years 1897 to 1909 dealt almost exclusively with immediate duties which had no necessary bearing on the larger interests of the United States."

Except for a few general statements, the author does not attempt to explain how the maneuvering of this period is reflected in the tensions of today, but much of his evidence speaks for itself. "Yet to Asians, foreign ships in their territorial waters were the embodiment of the wealth and the pretensions of the Westerners who came uninvited to their shores. The officers and men of these ships, no less than diplomatic and consular officials, were foreign representatives by whose words and deeds the East judged the intentions of the West. To this day Asian nationalists are stirred to deep resentment by the memory of foreign warships - the symbol of Western domination - moored in their ports."

Professor Braisted gives a refreshing insight into a short period of American history that had received little attention in recent years.

THE ICE WAS ALL BETWEEN - by T. A. Irvine. Illustrated with photographs and end-paper maps. xxiii + 217 pp. Toronto: Longmans, Green & Co. $4.50.

On July 23, 1954, the Royal Canadian Navy's arctic patrol vessel HMCS LABRADOR left her dock at Halifax and headed northward. This was the maiden voyage of "the biggest and most complex naval ship" ever built in Canada. There had been no time for sea trials. It was November 23rd when she returned to Halifax. During these four months she had traveled 18,000 miles, having gone around the North American continent before tying up again in the Nova Scotian port. But the greater part of the voyage was an anti-climax and of little significance to the men of the LABRADOR after she had fought her way through the ice to become the first deep-draft vessel to traverse the Northwest Passage.

The LABRADOR had the sharply sloping cutwater that has become characteristic of modern icebreakers. For quicker maneuvering in the ice, her diesel engines were controlled directly from the bridge. There was a small flight deck for two helicopters that would seek out the best passage through the pressure ice. These and other features did not eliminate the hazards of the Arctic, yet what explorer of a few generations ago would have dared to dream of such a giant step? What would Amundsen have thought of a skipper who grumbled because it had required four days to reach Dealy Island, two hundred and fifty miles from Resolute Bay across frozen Melville Sound!

The author, who was an officer on the LABRADOR, has written an interesting account of life aboard the ships that are completing the map of the North.

-Roy Rogers

AMERICA IN THE ANTARCTIC - by Philip I. Mitterling. Charts. viii + 201 pp. Urbana, Illinois: University of Illinois Press. $5.00.

The Antarctic assumes more importance in world affairs every day. Newspaper accounts of the explorations and experiments being conducted by parties at permanent bases are becoming common occurrences. A national magazine recently featured an article by a U. S. Navy Admiral who spoke of his comfortable quarters where he slept under an electric blanket. With this as a background, the history of early American ventures into this region should furnish an interesting contrast, but the author has badly neglected the opportunity.

There is little that can be said in favor of this book. Several of Mr. Mitterling's errors are so absurd that the reader is forced to doubt the accuracy of many other points. To cite one example, he states that Captain Cook, being unable to find satisfactory ships for his second voyage, insisted on having two vessels especially built under his own supervision. (The RESOLUTION and the ADVENTURE were, in fact, Whitby colliers, purchased by the Admiralty and modified for the voyage.)

This is a short book - the main text runs to 168 pages - yet a whole chapter is wasted on John Cleves Symmes and his theory that the earth is composed of a number of internal hollow spheres. Instead of using the present title, it might have been better to have called this a study of the Wilkes expedition, since about half of the book is devoted to it.

Much of Mr. Mitterling's description of the Wilkes controversy is taken up with the bickering in Congress over the question of appropriating money for the expedition. He attempts to justify his lengthy account of these squabbles by implying that they resulted in establishing a precedent for using federal funds in later expeditions. Perhaps so, but he seems to have forgotten that a more famous group, Lewis and Clark, had received funds from an earlier Congress.

-Roy Rogers

CORRECTION: - The review in the last issue of "The Cutty Sark" by C. Nepean Longridge (New York: Edward W. Sweetman Co. $10.00) failed to include the total number of pages. It should have read: xxix + 208 and xi + 232 pp. (two volumes in one.)

SLOP CHEST: Thomas Hornsby wishes to sell a set of matched carving tools (10 chisels and gouges): $7.75 postpaid. Write directly to Thomas Hornsby, Cheltenham, Penna.

JOHN PAUL JONES: A Sailor's Biography - by Samuel Eliot Morison. Illustrations and maps. 435 pp. Boston: Little, Brown and Co. $6.50.

John Paul, the Jones was added in later years, was born July 6, 1747, the son of a Scotch gardener. There is no basis in fact for the allegation that he was the illegitimate son of a British nobleman. Apprenticed to the merchant marine at the age of 13, he was master of his own ship at 21. During that time he had been several times in Virginia and the West Indies and had made two voyages in the slave trade; two were enough in this filthy business. He became a superb sailor and, as he was later to prove, a gifted leader and tough fighting man. He was not easy to get along with and possessed a fiery temper which caused him much difficulty. He was also fond of feminine companionship, fully reciprocated, by the way, as readers will learn in some detail, which at times added to his difficulties. In his early years Jones was without the patronage of wealthy or influential friends, and he was largely self-educated. Through reading and study he obtained complete mastery of the English which replaced his original Scots brogue. His letters were well written. Jones rejected the tavern society favored by most sailors and not a few ship masters and preferred the company of educated and cultivated people. In manner and dress he was completely at home among gentlemen.

From his early contact with America, Jones decided that this would be his adopted country where he would one day retire to a life of peace in a new land. When independence hung in the balance he offered his sword and service to his adopted country and devoted his whole energies to the infant Navy. Jones's exploits highlight the Naval side of the War of the Revolution, but when the war was over he was not rewarded in the measure of his worth. Neglected and passed over, he spent a period in the service of Catherine the Great of Russia, but returned again to Paris a disappointed man. A task of trust and responsibility was offered him, namely to negotiate the ransom of American sailors enslaved in Barbary, but the Commission arrived too late by one day. John Paul Jones had died on July 18, 1792; he was 45 years and 12 days old.

Admiral Morison has written an excellent book. In deceptively simple and eminently readable form he has presented the concise results of careful research and scholarship. Bibliographic notes are included for those who wish to read further in the original materials, and an appendix is devoted to the perforation of some widely circulated myths. Well selected and useful illustrations extend the text. The result is a valuable and timely addition to our sea and bibliographical literature and a believable picture of John Paul Jones.

-Vernon Tate

OUT OF APPLEDORE - by W. J. Slade; edited and with a preface by Basil Greenhill. Illustrated with photographs and plans. xxi + 127 pp. London: Percival Marshall & Co., Ltd. 22/6.

This is the autobiography of a man born in 1892 in Appledore, Devon, who spent the greater part of his life at sea in British coasting schooners and ketches. His family were all seafarers - captains and owners of coasters. He made his first trip on his father's vessel before he was a year old and spent a month or more each summer at sea until he was twelve, when he left school and went to work as a boy in the ketch ULELIA. He became mate of a schooner at seventeen and master two years later, continuing until World War II when the almost complete disappearance of sailing vessels from the British coast forced his retirement from active seagoing.

Captain Slade writes a simple, straightforward English with no pretensions to literary elegance, and Mr. Greenhill has wisely left the text as written, with only minor clarifications and changes in punctuation. This book is made up of a selection from a much longer manuscript, but presents a substantially continuous story. The

omitted portions were presumably accounts of voyages with little of interest to record.

The life of a master of a British coaster was not an easy one. The vessels usually carried only four men - captain, mate, A. B., and boy - and the captain had to take his turn at steering, sail handling, and sometimes even cooking; besides navigating and handling all the business of the vessel. In port, all hands pitched in to discharge and load cargo and ballast. After World War I, when most of the vessels were fitted with auxiliary motors, the captain became an engineer as well, and had not only to run the motor, but to keep it in repair. Captain Slade gives a well-balanced account of the life, neither glamorizing it nor exaggerating the difficulties. In his case the difficulties were aggravated by seasickness, from which he suffered as long as he went to sea.

In addition to Captain Slade's text, the book contains a preface by Basil Greenhill, giving background material about Appledore, the coastwise trade, and the preparation of the book. There are four appendices: 1) A list of vessels owned by the Slade family, 1888-1948, with a brief history of each. 2) Notes by Captain Slade on the racing of ketches and schooners. 3) A note by Captain J. Whitfield about Captain Slade. 4) Plans of the M. A. JAMES by David R. MacGregor, from a survey made in 1954. He states that these are more accurate than those in Vol. 1 of Greenhill's "Merchant Schooners".

One thing lacking is a map of the places mentioned. Many of these are small out-of-the-way ports not shown in most atlases. One must be well informed on British geography to locate places like Hubbastone and Cadgwith. These, along with fifteen others, are not to be found in the "American Oxford Atlas", the "Times Atlas", or the "Columbia-Lippincott Gazetteer".

-Frank W. Thober

YONDER IS THE SEA - by Gershom Bradford. Illustrations by Harold D. White. xvi + 231 pp., Barre, Massachusetts: The Barre Gazette. $5.50.

Captain Bradford has been a member of the Nautical Research Guild for a number of years, and his latest literary effort is best summed up in his opening paragraph addressed to the reader: "In your hands are the experiences of many seamen. If you can spare a little time I will lead you through the sequences of my life showing why and how the sea has called me. Then I shall introduce you to some of my shipmates and others, from whom I have gathered this lore - Americana on the sea." This work is but mildly biographical and is mostly devoted to unusual sea yarns that were passed on to the author in a lifetime of association with seafaring men. Some of the tales are amusing, some a bit grim, and all are, by and large, good reading. There is no plot and there are no lengthy discourses. There are a number of incidents, or tales, if you will, that are so skillfully blended that the reader is left with a pleasant feeling of having known the many characters presented in the work, and the end comes too soon.

-J. W. Harbin, Jr.

MASTER OF THE MOVING SEA - by Gladys M. O. Gowlland; edited by J. Ferrell Colton and Antoinette G. Smith. Illustrated with photographs and drawings. xvi + iii + 304 + xxvii + 15 pp. Flagstaff, Arizona: J. F. Colton & Co. $10.00.

Peter John Riber Mathieson was born in 1871 in the cabin of a Norwegian bark anchored off Gravesend; in November, 1944, he resigned command of the cargo steamer JOSEPH E. WING. In the intervening years he sailed on about forty other vessels of almost every type, sail and steam, from a 4 1/2 ton fishing boat to the SS WASHINGTON. His most notable command was the old Australian clipper ANTIOPE, which he had from 1905 to 1915. At that time she was owned in San Francisco, but registered in

Victoria, B. C. and was engaged in the timber and coal trade between the West Coast of the U. S. and Australia.

This book is an account of his seafaring life, written after his death by his sister-in-law "from his countless anecdotes, manuscripts, notes, detailed records, and stories." It is in the first person, as though told by the captain himself, but there is no way of knowing whether the words are his or the author's, as the sources used are nowhere described more completely than in the preceding sentence. I suspect most of the words are the author's; the writing is generally smooth and professional sounding, and she has been a writer for many years. The emphasis is on people rather than ships, but when technical sea language is used, it is most always used correctly.

The book makes no major contribution to maritime history, but it is interesting and contains a lot of information on cabin and forecastle life in both sail and steam. There is, however, one story that is of some significance. Mathieson was second mate of the SS KASBEK in 1897 when she towed the T. F. OAKES into New York at the conclusion of her notorious nine-months passage from China, during which six of her crew died of scurvy and the rest were close to death when she reached port. His account of this episode differs widely from the usually accepted one. The wife of the captain of the OAKES was awarded a medal by Lloyds as she was considered mainly responsible for getting the ship into port with any of her crew alive. According to Mathieson, she was a human fiend who kept herself strong by hoarding what little food was left and letting the crew starve. Unfortunately, his account is open to some question, as it is based not on his own observations or even on a contemporary account, but on a series of conversations in 1937 and 1938 with a man who was an A. B. in the OAKES. After forty years his recollection of the events may have been hazy, or he might have been tempted to embellish the story a bit.

The book is unfortunately marred by a great deal of careless editing. Most of the vessels mentioned are identified in footnotes, but many of these are incorrect, incomplete, or confusing. S.S. seems to mean "steamship", and S.s. "steel ship", but a reader not familiar with the vessels could be forgiven for not recognizing such subtle differences, especially as there is no key to the abbreviations. Some of the notes contain information at variance with the text. For example, Captain Mathieson could "well remember how we stood on the deck of the barque SAMSON at her launching," while the footnote says the SAMSON was built in 1855, sixteen years before the captain's birth! The captain mentions the conversion of the ship WILLIAM H. SMITH (built in Bath in 1883) to a five-masted schooner. The footnote identifies her as a four master built in California in 1917. Many similar examples could be cited, but these will give some idea of the uselessness of the notes. Practically all the vessels mentioned were seagoing ships in service within the last eighty years and could have been correctly and completely identified by a few hours work with Lloyd's Register. If the editor was unable or unwilling to do this, he should have omitted the identifications.

In the appendix there is a summary of Captain Mathieson's voyages compiled by the editor. This is incomplete, does not always agree with the text, and contains a lot of useless information. It has a column of notes that informs us, among other things, that the ships loaded at the beginning of each passage and discharged at the end. It also records each time a vessel crossed the equator, the 0^{o} meridian, and the 180^{o} meridian, which adds to the length of the tabulation without giving any useful information. On one passage from Caleta Buena, Chile, to San Francisco, the only note is "Crossed Equator". If the ship had made this passage without crossing the equator, it really would have been worth remarking.

Mr. Colton deserves credit for publishing books that add something to the total of recorded maritime history, but are not likely to enjoy a large sale; one cannot help regretting, however, that they are not better edited, printed, and bound.

-Frank W. Thober

A VOYAGE IN THE PURNELL T. WHITE

NEW YORK TO GEORGETOWN IN 1933

BY JAMES S. McCULLOUGH

PART 2

October 23rd Cont'd. "We won't set the spanker yet for a while," said the Captain.

The Mate gave the order, "Clear up the deck." The halyards were hauled back to their places and coiled down in the waterways, clear for running, boom tackles hooked to the lee rail, and lee topping lifts slacked off; then we knocked off for breakfast. We passed around the Scotland Light Vessel about 7:30 A.M., and the log was streamed. After breakfast we set the spanker and gybed the mizzen over, and the vessel ran off before the wind, wing and wing, on a course S 1/2 W (Var. 12° W) toward Barnegat Light Vessel, forty-one miles from Scotland Light Vessel. We set the main and fore topsails during the morning, but soon clewed them up. The vessel, running light before the wind with a moderate swell, rolled too much to carry them. We sighted Barnegat Light Vessel, with her black hull and white-lettered name, off the starboard bow at 2 P.M. About that time the wind hauled around to the northeast and freshened up some. We were averaging 6.3 knots. We gybed the sails over on the port tack and shifted and set the fore and main topsails, and the vessel rolled along making eight or nine knots with all sail set but the mizzen and spanker topsails. (The vessel had no outer jib bent.)

During the first watch (8 to 12 P.M.) we ran through several rain squalls, the wind freshened, and the sky to windward looked threatening. The watch clewed up the fore and main topsails and tied them up. At eight bells (midnight) while both watches were on deck we lowered the spanker and tied it up. The Captain said the glass was falling.

October 24th. During the middle watch (12 P.M. to 4 A.M.) the wind increased to a moderate gale with occasional rain squalls and kicked up a rough quartering sea. The vessel, having no ballast, since it was not often carried in coastal schooners, was high out of the water and dry on deck, but she did roll. About daybreak the wind hauled to the eastward and moderated. The water was dark in color, indicating the vessel was in deep water, a hundred fathoms or more, so the course was changed to S.S.W. (Var. 9.8° W). The Mate took a sight for longitude (line of position) at 8 A.M., and according to his figures we were about seventy miles off shore.

The fore, main, and mizzen topsails were set at four bells (10 A.M.). It was blowing a moderate breeze, and a heavy swell was running. The spanker was still tied up as the vessel was rolling too much to carry it safely, and we were making about six knots without it. The flying jib, an old sail, began to go in some of the seams, so we hauled it down, fixed it hurriedly, and set it up again. By four bells in the afternoon the wind was light and baffling, and we ran into a heavy rain squall. The topsails were clewed up and the lower sails gybed over on the starboard tack, but half an hour later we wore ship again. We tied up the topsails at eight bells (4 P.M.) in a drenching rain. The passing squall left us in a flat calm, and the vessel rolled heavily in the big swells that were coming from the eastward. The gaffs and booms kept slamming and banging from side to side with such force that they shook the vessel, and it was not long before some of the sails began to go in the seams. Schooners were miserable things to be in when it was calm and a heavy swell was running.

At eight bells of the second dog watch (8 P.M.) we hauled down the jibs and lowered the fore, main, and mizzen sails. The vessel fell off into the trough of the sea, and everything that was not securely lashed down went adrift. A couple of empty meat casks we had on deck to catch rain water started playing tag with each other, loose dunnage to be used for firewood ran races across the deck, and a couple of

buckets tried to batter themselves to pieces against the bulkhead every time the ship rolled. The pots and pans in the galley were having a hilarious time with the firewood and coal bucket. The vessel almost rolled the rails under and seemed about to snap the masts right out of her. A steamer passing close aboard signaled us with a Morse lamp, but no one in the vessel could send or receive the code, and she soon disappeared into the night. Calm and heavy swells meant nothing to her as she plowed along toward her destination at ten or twelve knots.

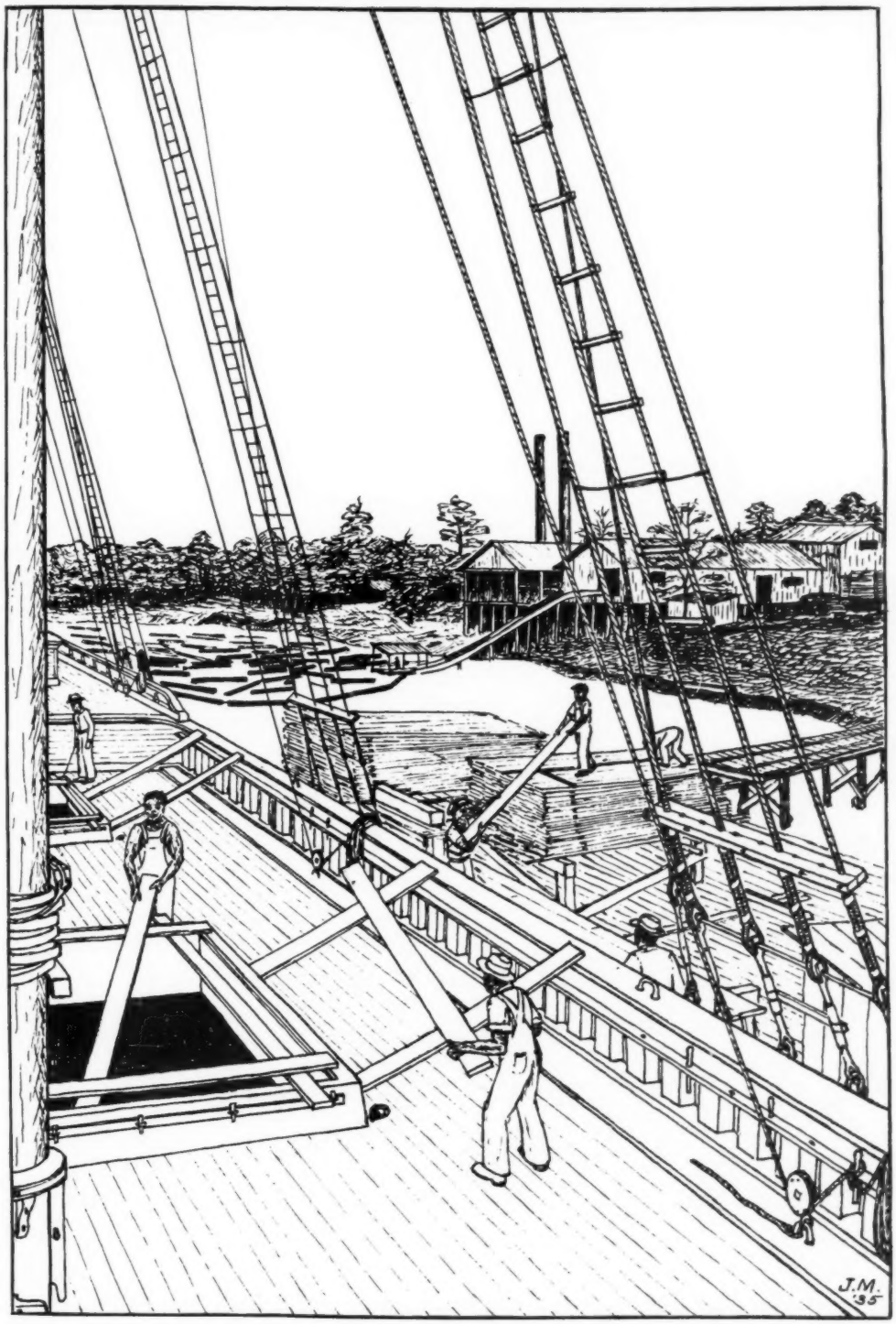
About 10 P.M. we got a light breeze from the northwest, a great relief after several hours without any wind. The watch below was called out, and we set the main and mizzen sails and the jib. The wind increased to a fresh breeze, the sky was clear, and at midnight we set the foresail.

October 25th. By the end of the middle watch (4 A.M.) it was blowing a gale. The vessel was hove to on the starboard tack, the wheel hard down and in the beckets, but she would come up no closer than seven or eight points of the wind and then made a point or more leeway. The vessel had lost part of her forefoot one time when she grounded, and it had never been replaced. This interfered with her sailing qualities and handling. She would not tack except when loaded.

By daylight a heavy sea was running. The watch below was called out, and the foresail was lowered and tied up. Extra stops were put on the spanker, and more turns of the gasket taken around the flying jib. The wind shifted a few points to the north, the vessel was kept on a S.W. course (Var. 8.0° W), and she was going along ten or eleven knots under jib, forestaysail, and main and mizzen sails. At two bells in the afternoon, Diamond Shoals Light Vessel was just visible on the starboard bow, about five or six miles off, but we could not haul the vessel up for Frying Pan Shoals on account of the heavy seas, so the main and mizzen sails were lowered and tied up, leaving the vessel under forestaysail and jib.

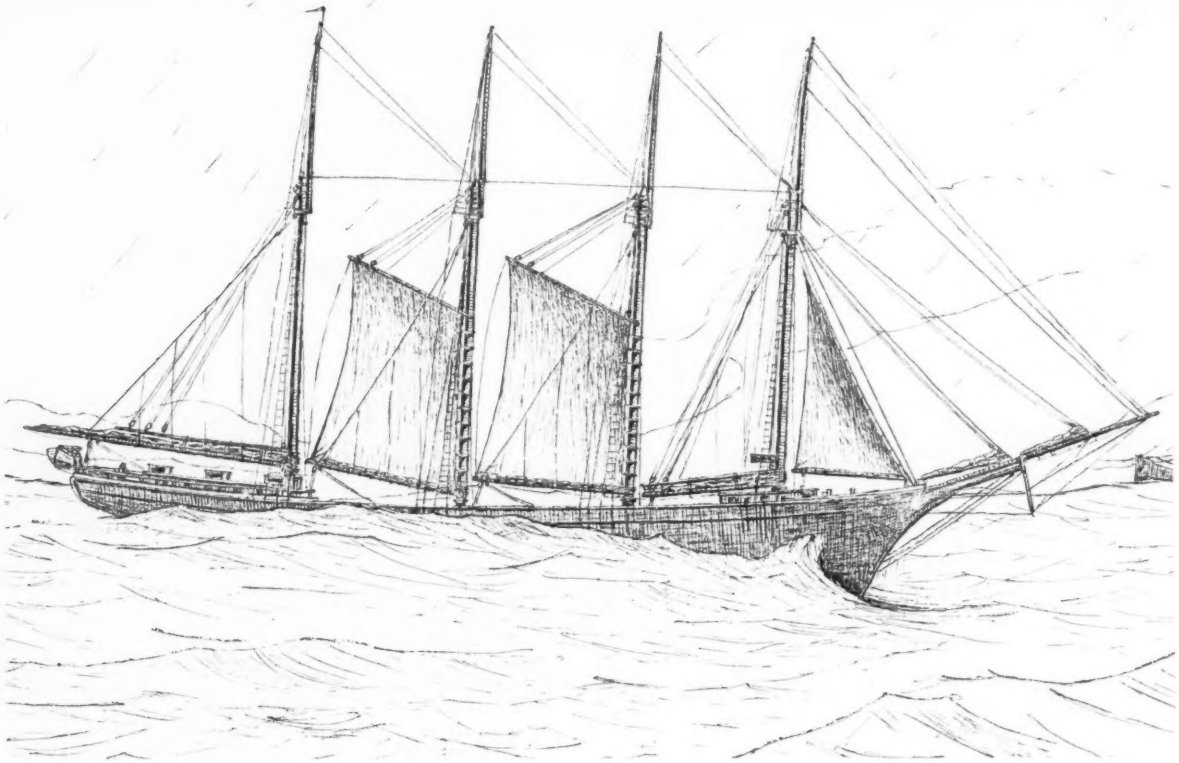
October 26th. We ran off to the southwest all night under bare poles, and in the morning we were out of the Gulf Stream. The wind and sea began to moderate as the vessel got under the lee of Cape Hatteras. At four bells (6 A.M.) it was daylight. The mizzen, main, and foresails were set, and the vessel put on a course W 1/2 S (Var. 5.0° W) to get into smoother water nearer the beach. We sailed about ten miles on this course, then changed the course to W.S.W. At eight bells the flying jib was set, and we discovered that the shell of one of the jib sheet blocks had been broken during the night. The jib was secured with a preventer sheet, and I was given the job of replacing the broken block. The preventer sheet had been made fast by the Mate in such a manner that it came adrift. The jib swung across the bowsprit with the roll of the vessel, struck me on the head and shoulder, and knocked me off the bowsprit. As I fell I grabbed hold of a stay, and the toe of my shoe caught in the foot rope; this saved me from going overboard. The watch below heard the jib slapping and banging across the bowsprit, shaking the foremast, and threatening to tear itself to pieces. They jumped out on deck, let the jib halyards go by the run, and manned the downhaul. The jib was soon under control, the broken block replaced, and the jib set again. I was very fortunate in not going overboard as there wasn't a life ring on the vessel. She could not heave to in the strong leading wind and the following sea, and it is doubtful if the vessel's one boat, securely lashed to davits on the stern, could have been launched in time. I lost my cap overboard, the only one I had, got a bruised head, but considered myself lucky, and my estimation of the Mate went down several points.

About four bells, forenoon watch, the wind veered to the northeast. The mainsail was gybed over, and the vessel ran off before the wind, wing and wing, on the same course W.S.W. (Var. 4.0° W). We were making eight or nine knots and a coastal steamer had a hard time overhauling and passing us. We ran off before the wind, wing and wing, most of the day, sighting several steamers, the north bound steamers on the port side, and the south bound ones on the starboard side.



This sketch was made from the deck of a four-masted schooner while loading lumber at the Palmetto Bluff Lumber Co. mill near Savannah, Ga., in 1924. Some large mills had line rollers or conveyors to assist the men, but at the smaller yards the lumber was loaded entirely by hand, as shown here.

-James S. McCullough



We picked up Frying Pan Shoals Light Vessel off the starboard bow about 5:30 P.M. and had her abeam to windward a half mile off at 6 o'clock. The vessel was then hauled up on a course W 1/2 S (Var. 3.5° W) for Georgetown Bar, seventy-nine miles away. About dark the wind hauled a little to the northward and freshened up. The flying jib was hauled down and tied up. On the first watch, (8 P.M. until midnight) we made forty-four miles by the patent log, our best run in one watch so far.

October 27th. The foresail was lowered and tied up at eight bells. We tried to make a sounding, but the vessel was going too fast to get bottom. About 3 A.M. the lookout sighted Georgetown Light and a little later the sea buoy. All hands were called, the fore and main sails lowered, the jib and forestaysail hauled down, and a sounding taken. We were in seven fathoms of water. The anchors were cleared, and we stood by to let go as soon as the vessel came up into the wind and lost headway. At 5:30 the starboard anchor was let go, with seventy fathoms of cable out. The mizzen sail was lowered, and a couple of stops put on all the sails, the deck cleared up of loose running gear, and both watches went below with the exception of one man left to stand anchor watch. The sails were not securely tied up as we would use them to sail up Winyah Bay to Georgetown.

All hands were called out at 8 A.M. to put a new sheave in the mizzen peak halyard block and get some firewood up out of the hold for the cook. Those jobs were finished in about an hour, and we were told to stand by for the towboat and pilot. Captain Porter, the pilot, came off in his skiff and boarded us at about 11 o'clock. The wind was light and fair. The anchor was hove short, the spanker, mizzen, main, and fore sails were set, and we had dinner while we waited for the tide to turn flood. After dinner the anchor was hove in, and at the same time the forestaysail and jib were run up. Next the spanker topsail and flying jib were set as we headed for the

entrance to the jetty and Winyah Bay. The towing hawser, mooring lines, and fenders were gotten up out of the hold where they had been stowed for the passage south. Inside the jetties the headsails were hauled down and the anchor let go about 2 P.M. The fore, main, and mizzen sails were lowered, the spanker topsail clewed up, and the spanker lowered. The spanker and topsail were tied up with a harbor furl as they would not be used any more on the voyage. The rest of the sails had loose turns taken around them as they would be used again. We had three days and twenty-two hours from Scotland Light Vessel to the sea buoy off Georgetown Light. The most direct route by sea between these two points is 557 miles. We sailed about 577 miles for an average of 6.14 knots per hour. The best run in one watch (four hours) was 44 miles by patent log.

The Captain was in no hurry to get to the dock as the schooner ALBERT F. PAUL was alongside being loaded, and the dock, a small one, would accommodate only one vessel at a time.

October 28th. We turned to in the morning at 8 A.M., hove short the anchor, washed down the decks, and stood by for the towboat. About noon a motor launch came alongside with the pilot. The port's only towboat, an old steam tug, the W. H. ANDREWS, owned by the Atlantic Coast Lumber Co., was laid up, so the motor launch was going to assist us to our berth. The launch was made fast on the port quarter, and we waited for the tide to turn flood.

The mizzen, main, and fore sails were set, and as soon as the tide had turned we hove in the anchor, setting the forestaysail, jib, and flying jib at the same time. With the aid of the tide and a light favorable wind, the launch kept us in the channel and moving toward our destination. It is about sixteen miles from the jetties up Winyah Bay to the dock at Georgetown. When we were about a mile away from the dock, we hauled down the head sails, and the launch shifted over to the starboard quarter. As we approached Tyson Lumber Co. dock, the fore, main, and mizzen sails were lowered. When we were opposite the dock, the starboard anchor was let go, and the vessel swung around in the stream and up alongside the ALBERT F. PAUL. We made fast to her, tied up the sails, cleared up the deck of loose running gear, and knocked off. We were nine days from dock to dock. The average time for schooners was about thirteen days.

John, Nick, and Andy didn't like the way things were turning out, for they wanted to get about two months out of the voyage and a halfway decent payday, if that was possible on thirty dollars a month. The way we were going, the voyage wouldn't last more than a month.

It would be three or four days yet before the PAUL was loaded and we could go alongside the loading berth. The Old Man gave us some money after supper, two dollars apiece, and we went off to see the town. We had ten dollars apiece wages due us for the time we were in the vessel and believed we were entitled, according to law, to draw half of our wages, but the Captain said he did not have that much money, and anyway two dollars was enough to spend in one night in Georgetown.

October 29th. This was a Sunday so no work was done. The time was spent visiting the crew of the PAUL and loafing around.

October 30th. After turning to at 8 A.M. we unbent the jib and took it ashore to a large shed on the dock where we could repair it on a rainy day. Bosun chairs were then rigged on the fore, main, and mizzen topmasts, and we started scraping them down. Before we knocked off for that evening, the towing hawser was coiled down underneath the forecastle head to keep it dry.

October 31st. We finished scraping and slushing down the topmasts, rigged the triangle on the foremast, and began the job of scraping it. The mainsail was unbent and taken ashore to the shed for repairing later. After cutting wood for the cook, we

swept down the decks and knocked off at 4 P.M.

November 1st. Three men continued scraping down the foremast, while another sewed on the jib. The PAUL finished loading in the evening.

November 2nd. We turned to at 7 A.M. and hauled our vessel astern of the PAUL. She breasted off, and we warped in alongside of the dock to load.

Under the NRA (National Recovery Act), the longshoremen got twenty-four cents an hour and worked eight hours a day. When I was in Georgetown some months earlier, before the NRA went into effect, they were being paid from seven to nine and one half cents an hour while working ten hours a day.

November 3rd. We finished scraping down the foremast, and had started on the main when it began to rain, so we were set to work sewing sail in the dock shed. The PAUL was still tied up alongside, waiting for a fair wind and a tug from Charleston to tow her out. The Mate took himself ashore for a short vacation.

November 4th. After completing the job of scraping and slushing down the mainmast, we proceeded to set up the main rigging on the starboard side and put on a new sheer pole. This was a Saturday, so after washing down the vessel fore and aft, we cleaned up the forecastle and knocked off early. The longshoremen worked only half a day.

The crews of both schooners drew money, and it wasn't long before the South Carolina corn liquor was flowing freely. At first the party was quite sociable, but this was soon followed by fights and some knife play. These troubles were quickly forgotten, however, while sea chanties broke out again in full force.

November 5th. This affair continued all through the night. No one was seriously hurt, but the PAUL's forecastle was a wreck. With the money and liquor exhausted and most of the men stretched out, the rest of Sunday was quiet and peaceful.

November 6th. The work aloft was continued. Scraping and slushing down the spanker mast was finished, and then we started on the mizzen. The longshoremen were unable to work as there was no lumber on the dock. The Mate returned to the ship.

November 7th. The lengthy job of scraping and slushing down the masts was finally finished. The wooden masts on schooners were gone over every two or three months. If possible, the job was done in a southern port in warm weather so that the grease would go on the masts smoothly and evenly. This helped to preserve the masts and also allowed the mast hoops to slide easily. When the work was finished the masts were bright and shining and looked as if they had been well varnished.

To be continued

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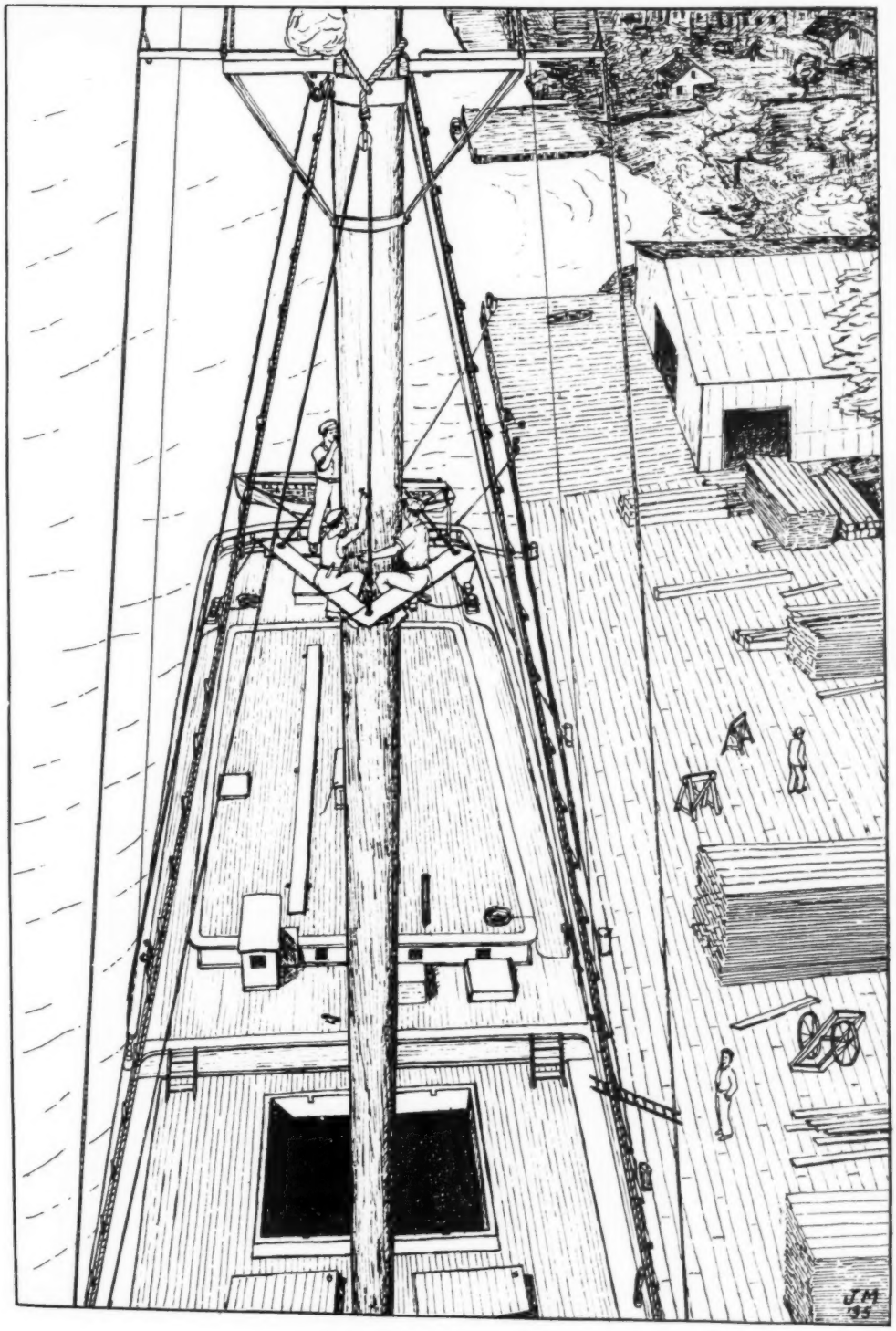
WRITE DEPARTMENT A

Ship Models



Nicely grained Oregon pine masts, newly scraped and slushed, made a striking picture shining in the sun. The lower masts were scraped from a triangle. Three men usually rode it down, while the Mate and one man stood by on deck to lower away.

-James S. McCullough

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THE ERA OF THE SPRITSAIL TOPMAST

An Introduction
by
Winthropp Pratt, Jr.

The spritsail topmast was introduced during the first years of the 17th century. Perhaps it had appeared in the closing years of the 16th, although a Dutch print depicting the capture of Cadiz in 1596, which shows this mast, may have been engraved a few years later. The PRINCE ROYAL, built in 1610, had it, and as the second-rate NONSUCH together with the third-rate ASSURANCE (both built in 1603) had this mast when the Petworth House manuscript of 1640 was written, it is possible that both ships had it when built. Clowes says that during the years 1611 to 1618 the spritsail topmast was regular equipment for all English men-of-war, but that it was not usually stepped during the winter months.

The presence of this mast on models of the middle 16th century has been established as due to rerigging at a very much later date - in one case as late as 1700, where a jib-boom is also shown.

The introduction of a flying jib and jib-boom by an Admiralty order of 1702 foreshadowed the demise of the spritsail topmast, and Clowes says that by 1712 it was not carried on ships of 60 guns or less, and the 70 gun ships followed suit after the Establishment of 1719. However the big three-deckers retained it, and the Establishment of 1745 provided for a spritsail topmast together with a jib and jib-boom for all three-deckers, which impractical arrangement had been in vogue for these big ships since 1719. As a matter of fact, many of these first-rates had the spritsail topmast right up to the time of the American Revolution, but it was a carry-over, and appeared on these first-rates only.

It is well to note, by the way, that the spritsail topmast was a characteristic of men-of-war, and, except for a few large ships, was not the usual thing for merchant vessels.

During the period of over a century, when the spritsail topmast was in vogue, several changes of major importance in the design and rig of ships came about. Among these are the disappearance of the whipstaff and the advent of the steering wheel during the reign of Queen Anne, the square or transom stern giving way to the round tuck, the galleon hull being supplanted by a more burdensome type and the disappearance of the long beakhead, the introduction of staysails, jib and jib-boom, the bowsprit shrouds, and a notable number of changes in the shape of the tops. There were also hundreds of other changes, some of which we will describe at the proper time, but as we are concerned primarily with construction and rig, the many changes in decoration which took place will not be discussed.

In the case of the spritsail topmast itself, there are some models which have what appears to be only a flagstaff but having the usual backstay or "crane-line", and a topsail yard, but no top. One would suppose that these models had been damaged or were undergoing repairs when photographed, but there are also reproductions of contemporary prints and paintings which show the same thing, and it is doubtful if this absence of the spritsail top can be attributed to carelessness on the part of the artists. I rather think that there may have been instances where a spritsail topsail may have been carried on the flagstaff as a fair weather sail - perhaps only on small ships - in which case there would be no top, just as some ships occasionally set a small driver on the flagstaff at the stern. However, it is quite safe to say that such an arrangement would have been out of the ordinary.

Up to about 1670, the spritsail topmast was not carried on the smaller warships, but after that even some of the sixth-rates had it.

For the model builder who is intent on constructing a 17th century war ship, a few sets of lines have been published which can be enlarged by the photostat process. Before proceeding along this course, I would advise a re-reading of Howard Chapelle's concise article, "The Graphic Scale in Old Ship Plans," which appeared in our Journal of November 1951. There are also some modern plans, based on contemporary plans or models, which, while they may not show every last detail, will give you a lot to go on.

Sources of such plans have been published from time to time in our Journal. English plans are a bit more plentiful, and are in our own language, but there are also a few French and Dutch ones which would make fine models. Of those, the Dutch WILLIAM REX of 1692, the Danish FREDERICK IV, 1699, and CHRISTIANUS V, 1693, and Milward's Dutch-built FRENCHMAN of 1626 and his DUTCHMAN of 1665, are perhaps the best. I have omitted the well-known SOVREIGN OF THE SEASof 1637, because she does not represent a typical ship of the period, and because so many models of her have already been built, but plans and data are available. Personally, I would choose a good English two-decker as a more interesting type, and easier (in some ways) to build.

Having decided upon a project, the matter of scale arises, and of course, 1/4" to the foot gives best results. Unfortunately this scale will produce a completed model of four feet or so in length - just the thing for a small apartment! A 3/16" scale is really ideal for most of us, but does bring some details to pretty fine proportions.

As to a method of construction we have a choice of the fully framed and planked hull (definitely a tough job even for the experienced hand), the out-and-cut "solid" hull, or the "dug-out" or hollow solid. Perhaps the happiest solution is the solid hull hollowed out, at least "where it shows," and then planked over. This type is ideal for a beginner or old hand, and it is not "cheating" either. Many of the dockyard models of early days were made this way, and such a model will stand up under the effects of modern heating systems far better than the framed up type. I have had the good fortune to work on such models, and it is amazing to see the amount of real detail and joiner work which is possible - deck framing, bulkheads, gangways, belfries, the galley, stern walks and glazed quarter galleries and panelled doors, to mention only a few items.

Whatever method of construction is used, the choice of woods will, I think, prove to be a matter of personal preference. However, boxwood and pearwood were the favorites of the Admiralty model builders, with some use of ebony for the black wales, capstan bars, etc. European walnut and even oak were sometimes used for very large models, especially on the Continent, but these last are not suitable for small scale work.

In any event, be sure that the wood used is well seasoned, straight grained, and, for 1/4" scale or smaller, close-grained.

Well seasoned box and pearwood with these qualities are not always readily obtainable, and the man with ambition, ability, and a rather thin pocket book may have to turn to other woods.

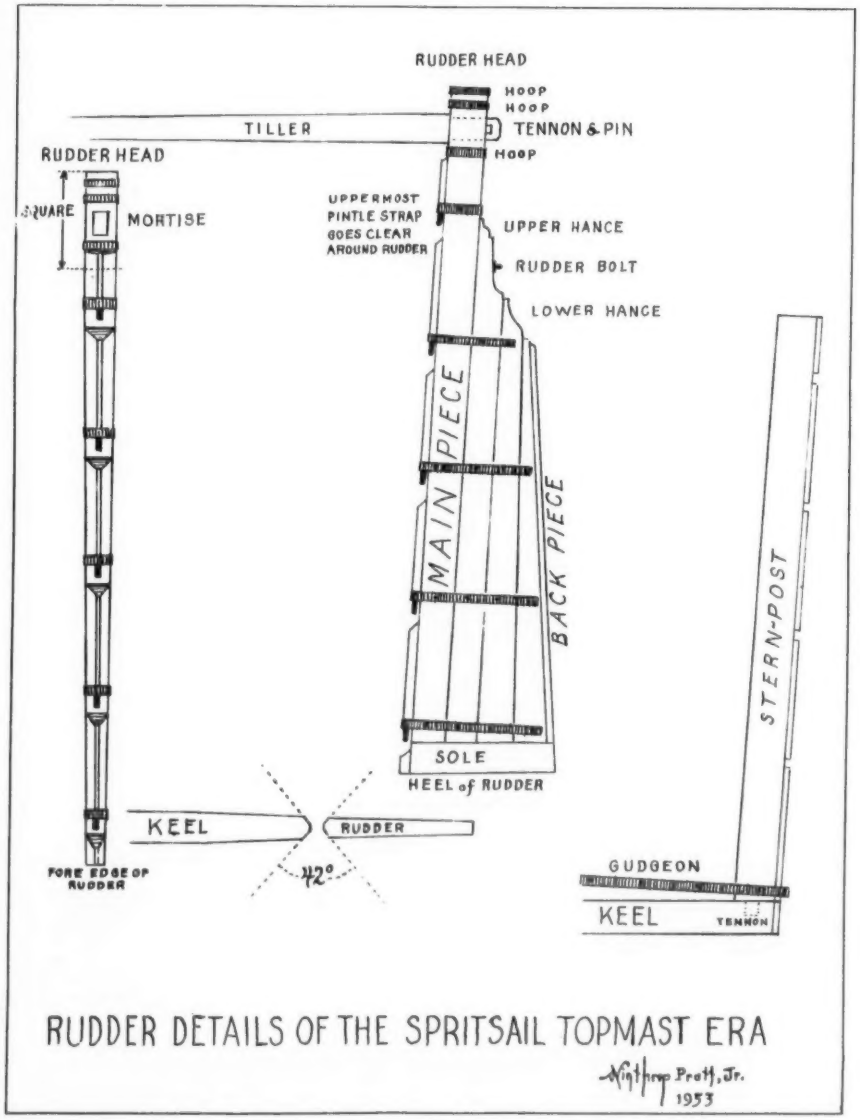
For a dug out hull (or a solid one for that matter) well seasoned pine or whitewood is excellent, and the insides of discarded pianos, old doors, and some furniture, is often a good source of supply. If you buy such wood, ask for pattern-maker's quality.

For the planking, both hull and deck, box or pearwood is of course the best, but clear white birch or maple will do very well too. Models have been built recently wherein cherry was used for planking as well as for framing, but it becomes rather dark-colored as it ages, a feature which is all right with some, and undesirable to others. It is nevertheless a good, sound, sturdy material.

Keel, stem, and sternpost can be made of maple or birch (in lieu of box or pear) or of cherry or apple if a contrasting color is preferred. Walnut can also be used here.

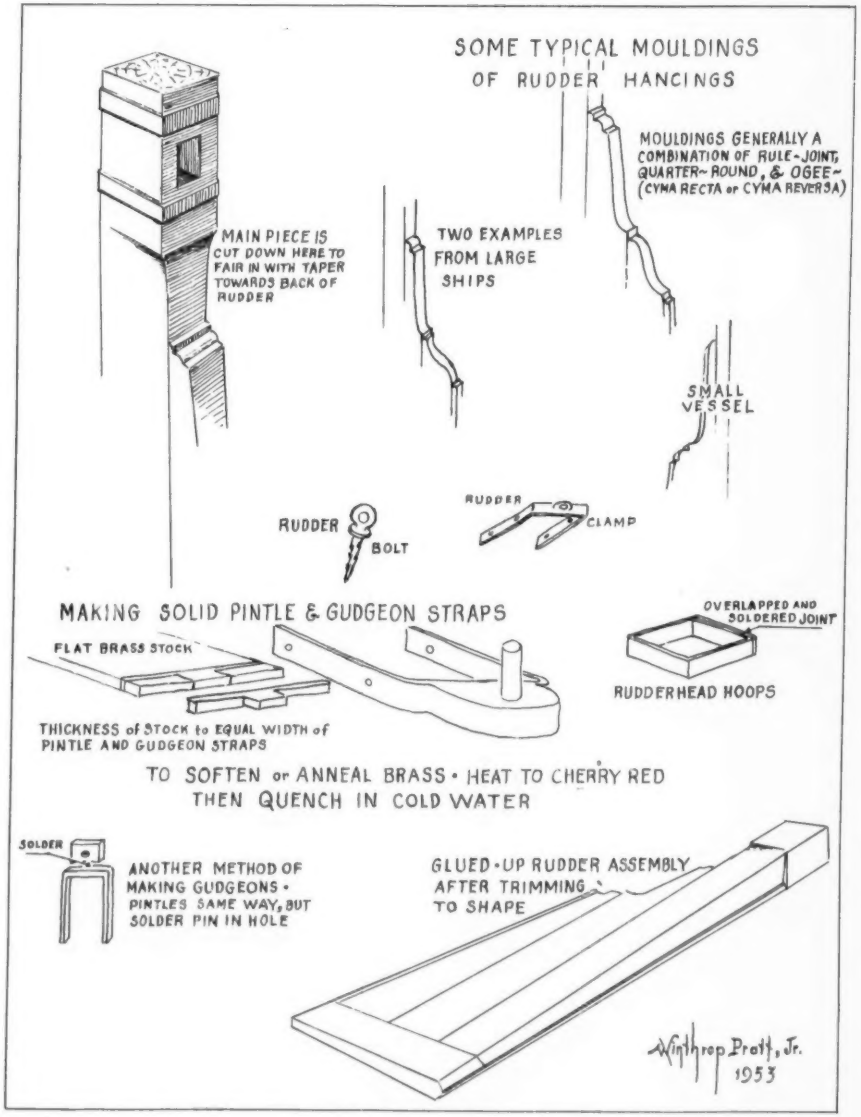
For masts and spars, one may use birch, maple, or box or pearwood. Some models have yards of a darker color, in which case cherry, walnut, or apple are fine - even ebony if you enjoy hard work.

As for sources of supply, I have said that old furniture will often furnish good material for hulls, although a bit too soft or brittle for plank or masts and spars. If you wish to purchase your lumber, Craftsman Wood Service Co., 2727 South Mary St., Chicago 8, Illinois, or Albert Constantine & Son, Inc., 797 East 135th St., New York 54,, N. Y., both issue catalogs. It's a good idea, for the beginner at least, to have these catalogs, as they will familiarize him with the various sorts of wood available. There are other firms of course, who can supply you, and a check of your phone book may show that there is a local dealer who can help you. Also, small jobbing cabinet shops can sometimes help a great deal in this respect.



RUDDER DETAILS OF THE SPRITSAIL TOPMAST ERA

Winthrop Pratt, Jr.
1953


SOME TYPICAL MOULDINGS OF RUDDER HANCINGS
MOULDINGS GENERALLY A COMBINATION OF RULE-JOINT, QUARTER-ROUND, & OGEE- (CYMA RECTA or CYMA REVERSA)
MAIN PIECE IS CUT DOWN HERE TO FAIR IN WITH TAPER TOWARDS BACK OF RUDDER
TWO EXAMPLES FROM LARGE SHIPS
SMALL VESSEL
RUDDER BOLT
RUDDER CLAMP
MAKING SOLID PINTLE & GUDGEON STRAPS
FLAT BRASS STOCK
THICKNESS of STOCK to EQUAL WIDTH of PINTLE AND GUDGEON STRAPS
OVERLAPPED AND SOLDERED JOINT
RUDDERHEAD HOOPS
TO SOFTEN or ANNEAL BRASS • HEAT TO CHERRY RED THEN QUENCH IN COLD WATER
SOLDER
ANOTHER METHOD OF MAKING GUDGEONS • PINTLES SAME WAY, BUT SOLDER PIN IN HOLE
GLUED-UP RUDDER ASSEMBLY AFTER TRIMMING TO SHAPE

Winthrop Pratt, Jr.
1953

THE ERA OF THE SPRITSAIL TOPMAST

by

Winthrop Pratt, Jr.

PART I - THE RUDDER

Some plans omit the rudder, and when it is shown there is often insufficient detail to work from. It is not infrequently missing from models, or has been replaced, sometime with doubtful results. At last there is much to be learned about rudder construction of the 17th century, and contemporary rules concerning its proportion are scanty.

In the first place a rudder was not cut from a single plank, even though it appears so on models, but was made up from many parts. The main piece, forming the back bone so to speak, was cut from a whole tree with the butt end uppermost. When necessary to make it of two parts, they were scarfed together between the second and third pintles. This was the longest timber, extending the whole height. There were one or two, or perhaps three, other pieces bolted to the after side of the main piece and another thinner strip nailed to the extreme after edge of the rudder. On the forward side of the main piece another timber was bolted, the notches for the pintles being cut into it, rather than weaken the main piece. On the bottom or heel, still another piece was bolted, extending the whole width. This was called the sole, the idea being that it would break off and free the rudder should it strike bottom in shoal water.

There was a mortise clear through the rudderhead to receive the tennon of the tiller, with iron hoops above and below the mortise, there were also the pintle straps and pintles, and a rudder bolt, clamp, or hole through the rudder itself above the waterline, to which was secured a rope or ropes, the upper ends of which were fastened under the stern. These served a dual purpose: to prevent loss of the rudder, should it become unshipped, and to keep it from swinging so far over as to break off the pintles.

The main piece was as thick as the sternpost at the top, and was about one-fifth more than that in its fore and aft measurement. This rectangular section extended from the top to a point about its own thickness below the bottom edge of the mortise, if the entire rudder is outside the ship, as on the early square sterned vessels, otherwise it extended as far as the wing transom. From here it tapered downward in a straight line as far as the bottom of the stern post where it joined the keel, at which point it was three-fifths the thickness of the head. The sternpost tapered in the same proportion, by the way, the keel was tapered aft to fair in with it, the stern post being tennoned into the top of the keel, with the tennon going about a third of the way through or a bit less. The other piece back of the main piece tapered in the same proportion and the whole rudder was diminished toward the back edge where it was half as thick as the main piece. The sole which faired in with the rudder itself, was about as wide up and down as the keel. You may have seen models where a sizeable piece was missing off the bottom of the rudder because the sole had become detached.

Now about the rules. The only one I have found gives the width at the heel (which at that time was the widest part) as four inches for each twelve feet of length of the ship on the gundeck. The gundeck, of course, was the lower one in a two-decker, the middle one in a three-decker, and the only continuous deck mounting cannon on frigates and others. At the lower hance, the rudder was two-thirds the width of the heel, the hance coming at, or just below the waterline. One rule says it should be one-half the vessel's extreme beam above the keel. From the lower hance the rudder diminished toward the rudderhead, either in a curving line or through an upper and less prounounced hance.

There was an 18th century rule which set the width of the rudder at $1\frac{1}{2}$" for each foot of extreme beam of ship, but the result would be only slightly at variance with the earlier rule. However rules were rarely carried out to the letter, and changes in beam, length, or draft of a vessel would mean a difference in rudder shape. A ship which was full and light draft would have greater width in the rudder than one which was sharp and deep. The rule of 4 inches to each 12 feet of length of gun deck will, I think, be quite safe for English ships of the line and frigates, at least from the first to the fourth rates, unless you have specific information. (To be continued.)

THE ERA OF THE SPRITSAIL TOPMAST
by Winthrop Pratt, Jr.

THE RUDDER - PART 2

Pintle straps appear to have been spaced about the width of the rudder apart, there being from two or three on small craft, to six or seven for big ships. The lowest one comes just above the sole of the rudder, that is, a little more than the height of the keel above the keel. The uppermost one encircles the main piece, or upper hance, as the case may be, and will come just under the lower transom. Those in between are about evenly spaced, as close to the width of the rudder apart, center to center, as is possible. They are roughly, some 4" wide for large ships, and proportionately less on smaller ones. Their thickness (to hazard a guess) should be 1/2" to 5/8". Pintle straps are lined up at right angles to the forward edge of the rudder, and the bolts go clear through both straps and the rudder itself. Gudgeons are same size as pintle straps, but from one-half to one-third longer than their corresponding pintle straps. Bear in mind that each pair of pintles and gudgeons is to fit over a different thickness of rudder and sternpost than the others -- a good reason why these fittings are not massed produced. Pintle straps are not let into the rudder, but are put on over it except on the forward edge. Gudgeons are let into the stern post, but the straps go on over the planking and not over the sheathing.

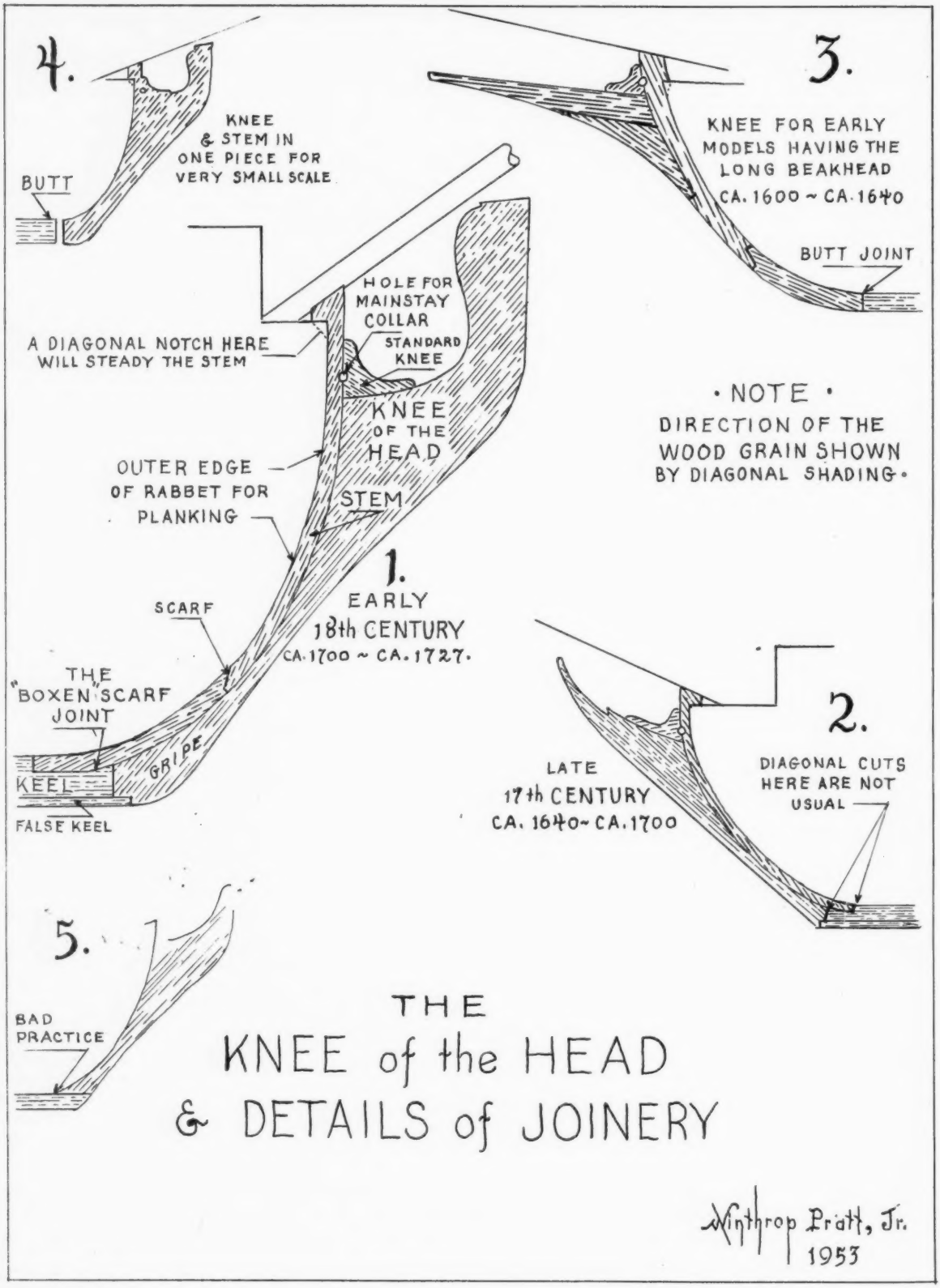
Some models show the keel extending beyond the after edge of the stern post and sloping downward, with the rudder out away to fit this slope. This appears to have been common practice in Holland and France but is not found on English ships, with one or two exceptions.

As to the bevel of the after edge of the sternpost and forward edge of the rudder, make them alike, about 21 degrees each, that is so that the rudder will swing about 42 degrees to either side. Some authorities say 47 degrees and some as little as 35 degrees, but 41 to 42 degrees seems to have been the practice. In cutting the bevels, don't bring them to a point, but leave a little flat at the apex about the thickness of the pintles or diameter of the pintle holes in the gudgeons.

The next item is the rudder bolt. This may be in the form of an eye bolt driven into the back of the rudder just above the waterline, or it may be an iron strap, like the pintle, with an eye in it, bolted through and through, and extending nearly half the way across the rudder, fore and aft, in which case it is called the rudder clasp. Sometime in the early 18th century, the rudder clamps had an eye at each corner, instead of a single one in thecenter, with rings or thimbles in the eyes. Ropes were spliced into these with their ends secured in the transom about a rudder's width each side of the rudder head. How early these ropes were led to the quarters I don't know, but think about the end of the spritsail topmast era - possibly a little earlier. The Dutch had a hole through the rudder itself. A large knot in the rope prevented its pulling through, and the other head led to a hole in the transom and thence inboard, where it was made fast. Some Dutchmen show only one rope, while others show one each side, but the English do not appear to have used this method. Some sort of rudder ropes were used from the very beginning of large ships, and appeared later as chains right up to the end of the sailing ship.

The mortise in the rudder head is half as wide as the thickness of the head, and measured up and down nearly as much as the thickness of the head. The tiller was tennoned clear through, with a wooden pin through the tennon on the after side. Tillers were about the same size as the rudder head, and were parallel sided for a few feet forward, tapering from there to half that size at the extreme inboard end. You can cut out and fit the tiller when you make your rudder, but it is best to put it on with its gear before the upper decks are down. If your model dates before 1710 or so, she probably had a whipstaff instead of a wheel, which makes some difference in the sort of gear on its inner end.

If you wish to make a built-up rudder, cut it out in profile from a piece which has been glued up of different woods - dark pieces for the main piece and back strip, with lighter wood for the beveled edge, sole, and other parts, or some similar combination. This makes a handsome job and shows workmanship.



THE KNEE of the HEAD & DETAILS of JOINERY

Winthrop Pratt, Jr.
1953